## OST CANADA

Devoted entirely to Canadian Amateur Radio Entièrement consacré à la radio amateur canadienne

**Foxhunts** 

Perrin Beatty Visits Field Day

708AA

\$2.50 September septembre 1991





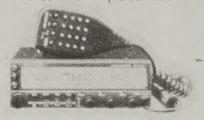
KENWOOD YAESU

Factory Authorized Dealer



Experienced Advice
 Competitive Pricing
 Customer Satisfaction

TM-741 NEW 144/430 MHz FM (28/50/1200 MHz FM optional)



TS-450S NEW HF 100W:1.8-28 MHz (TS-690S adds 50W: 50 MHz)



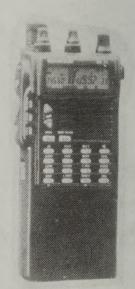
TS-850S/SAT NEW HE



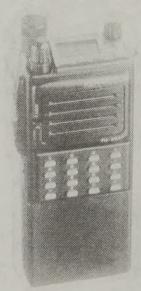
- Superior Receiver Dynamic Range with Kenwood's new AIP System
- Selectable IF Filter with Memory
- Switchable AGC Circuit (OFF/SLOW/MID/FAST)
- Dual-Mode Noise Blanker ("Pulse" or "Woodpecker") with Level Control
- CW Variable Pitch Control
- · CW Reverse Mode
- IF Slope Tuning for SSB, CW and FSK Modes
- 16-10-metre Amateur Band Operation with 100-kHz-30-MHz General Coverage Receiver
- Microprocessor Controlled Automatic Antenna Tuner (built-in or option)
- · 100 Memory Channels

#### TH-77A

- · Dual Band: 144/430 MHz
- **Dual Receive Function with Dual Displays**
- · Built-in Dual Tone Squelch System (DTSS)
- Pager Function
- DTMF Memory for Auto-dial Operation
- Built-in 2 VFOs for Main and Sub Bands
- **Dual Squelch Controls**
- Selectable Full-duplex Operation
- CTCSS Encode/decode built-in
- · Automatic Battery Saver
- · Automatic Offsets on 2 Metres
- **Automatic Band Change**
- Multiple Scanning Functions



#### TS-26AT



- · DTSS, a DTMF Selectable Calling Function
- Five-watt Output with Optional **BP-8 Battery Pack**
- Hi/lo Power Switch
- Extended Receiver Coverage: 141.000-173.995 MHz
- · Extended Transmit (with appropriate licence) for MARS and CAP Operation Large LCD Display
- Tone-alert System
- Auto Battery Saver Circuit
- Auto Battery Saver Function
- 21 Memories which will store Frequency, Offset and Sub-tone
- Reverse Switch
- Frequency-lock Switch
- CTCSS Encode/Decode built-in



Visit Our Retail Store 4767 Steeles Ave. W., North York, ON M9L 2W1

Monday: 10-7

Tuesday-Friday: 10-6

Saturday: 10-3 Closed Sunday





#### Mail Order

Telephone: (416) 745-1000 Fax 24-hours a day: (416) 745-5651

#### QSI\* CANADA

OST Canada (ISSN 0840-1670) is published monthly by CRRL Publishing, Inc., to provide radio amateurs, others interested in radio communications and electronics, and the general public with information related to the science of Amateur Radio communications.

Harry MacLean, VE3GRO

Bob Boyd, VE3SV, Garry Hammond, VE3XN, George Murphy, VE3ERP, Ray Perrin, VE3FN, Dana Shtun, VE3DSS, William Skidmore, VE3AUI, Ray Staines, VE3ZJ, Jack Strangleman, VE3GV Contributing Editors

Ray Staines, VE3ZJ General Manager

Keith Bentley, VE3DHL 148 Donhill Cr, Box 96 Kleinburg, ON LOJ 1C0 (416) 893-1984 Advertising Manager

LaserGraphics Linotronic Output WEBCO Division of Bowes Publishers, Ltd Printing and Distribution

#### **CRRL Office**

2025 Richmond Street Arva, ON NOM 1C0 (519) 660-1200

Subscription rates: CRRL membership with QST Canada: \$15 + \$12 + \$0.84 GST = \$27.84 per year. CRRL membership with QST and QST Canada: \$15 + \$43 + \$3.01 GST = \$61.01 per year. Two- and three-year subscriptions are available at multiples of the yearly rates. Copyright © 1991 by CRRL Publishing, Inc.

#### ABOUT THE COVER .



Hail, hail, the gangs's all here at the 1991 Post-VHF Contest "Do" held at VE3WCB's QTH in Milton, Ontario. Twenty-six attended. For more about the "Do" and other happenings in the world above 50 MHz, see the VHF-UHF column in this month's QST Canada. (VE3DSS photo) ■

#### It Seems to Us.../Il nous semble...

#### Packet Business, Part 2

Last month, we shared some ideas about packet messages, particularly messages that listed equipment wanted or for sale. While such messages are acceptable in Canada and the US, they are not acceptable in many countries overseas. In some countries, relaying such messages, even through a digipeater, could get an amateur into trouble. We suggested that Canadian packet operators should be a little more careful about what they send out, especially if there is a chance that their message could go beyond North America.

In support of this, and as an example of good work that has been done to solve some other packet radio problems, we'd like to share the UK packet radio guidelines that appeared in the 1991 July issue of Radio Communications, journal of the Radio Society of Great Britain (RSGB):

#### Guidelines for the Use of the Packet Radio Network

The packet radio network in the UK and throughout the world is an immensely useful tool for the dissemination of information, the seeking of help and advice and the publication of Amateur Radio related news. It is not uncommon to find information on AMSAT, Raynet [the UK emergency traffic system] or other similar activities. The GB2RS [RSGB] news is also on the network, as is local club news in the area of a particular mailbox. This use of the network is what was in many operators' minds when they spent large amounts of time and money developing it.

Unfortunately, the very success of the network has resulted in messages appearing which are of doubtful legality under the terms of the UK licence. The RSGB Data Communications Committee, in consultation with the Radio Communications Agency [similar to our DOC], has devised the following guidelines with which all [UK] operators are urged to comply. These guidelines have been split into four section in order to reflect:

A) The need for messages to be within the terms of the licence conditions and the implications if they are not.

B) Messages which could result in legal action being taken by other amateurs or out-

C) Actions to be taken when amateurs identify cases of abuse.

D) Other appropriate items.

#### **SECTION A:**

1) All messages should reflect the purpose of the amateur licence, in particular "self training in the use of communications by wireless telegraphy".

2) Any messages which clearly infringe licence conditions could result in prosecution, or revocation, or variation of a licence.

The Secretary of State has the power to vary or revoke licences if an amateur's actions call into question whether he is a fit and proper person to hold an amateur licence. An example of this could be unreasonable behavior by using the packet network to carry on a dispute or to deliberately antagonize other amateurs.

3) The Radiocommunications Agency has advised that the Amateur Radio Licence prohibits any form of advertising, whether money is involved or not.

4) Messages broadcast to "ALL" are considered acceptable, but should only be used when of real value in order to avoid overloading the network.

5) Do not send anything which could be interpreted as being for the purpose of business or propaganda. This includes messages of, or on behalf of, any social, political, religious or commercial organization. However, our licence specifically allows news of activities of non profit making organizations formed for the furtherance of Amateur Radio.

#### SECTION B:

1) Do not send any message which is libellous, defamatory, racist or abusive.

2) Do not infringe any copyright or contravene the Data Protection Act.

3) Do not publish any information which infringes personal or corporate privacy, e.g. ex-directory [unlisted] telephone numbers or addresses withheld from the callbook.

#### SECTION C:

1) Any cases of abuse noted should first be referred to AROS [RSGB's Amateur Radio Observation Service] which is coordinated by Geoff Griffith, G3STG, who will take appropriate action.

2) Any transmissions which are considered grossly offensive, indecent, obscene or menacing should be dealt with by the police. This action should be coordinated by AROS

initially.

3) Mailbox sysops have been reminded by the Radiocommunications Agency that they have an obligation to review messages daily and that they should not hesitate to delete those that they deem unacceptable. It is worth remembering that their licence is at risk as well as your own.

#### SECTION D:

- 1) Do not send "open letters" to individuals.
- 2) Do not write in the heat of the moment. Wordprocess your bulletin first, then reread it. You may feel differently after a few moments.
- 3) Obey the Golden Rule: if you would not say it on voice, do not send it on packet.

There it is. Perhaps we need something similar in Canada. Let's have your ideas. - Harry MacLean, VE3GRO

All letters are considered carefully. Letters are edited for clarity and may be condensed in order to have more information and readers' views presented. The publishers of *QST Canada* assume no responsibility for statements made by correspondents.

#### PROGRESSIVE ELECTRONICS AND COMMUNICATIONS: A CLARIFICATION

In June QST Canada, you printed an item which, even with good intentions, was incorrect and misleading. You stated that Hobbytronics is back in business. This is not true. Hobbytronics is bankrupt and defunct. A new company, Progressive Electronics and Communications, is now operating from the same location as the old Hobbytronics company. This is where the similarity starts and ends.

Progressive Electronics and Communications is a registered company whose owner is myself. Progressive Electronics and Communications does not own any other company. It is correct to mention me as the owner of the business.

The spreading of wrong information has caused me great difficulties in the proper operation of Radio Progressive Montréal, Inc., as it caused nervousness with some suppliers. Fortunately, I was able to "clean up" rapidly and stop all damages there. -Jean-Claude Hebert, President, Radio Progressive Montréal, Inc., St-Laurent, PO

QST Canada apologizes for the confusion that was created. -Editor

#### FROM A LIFE MEMBER

When I opened my mail and saw a QST Canada and read your comments in "It Seems to Us...", I was most pleasantly surprised. As I mentioned to you at the Computer Networking Conference last fall, I was not pleased with the earlier decision. I felt that ARRL was responsible for delivering to me what I had paid for a number of years ago-Canadian news as part of my Life Membership.

This has made my day! Please convey my thanks to each of the CRRL directors, not only for a deed well done, but for an attitude that, in my opinion, reflects well on CRRL. —Larry Kayser, VE3PAZ/WA3ZIA, Ottawa, ON

#### The Canadian Radio Relay League, Inc La Ligue Canadienne de la Radio Amateur, Inc

The Canadian Radio Relay League (CRRL) is a noncommercial association of radio amateurs organized for the promotion of Amateur Radio com-munications and experimentation, for the establishment of networks to provide communications in the event of disasters or other

emergencies, for the advancement of the radio art and the public welfare, for the representation of radio amateurs in legislative and other matters, and for the maintenance of fraternalism and a

high standard of conduct.
CRRL is incorporated under the Canada Corporations Act. Its affairs are governed by a seven-member Board of Directors elected every two years by the CRRL general membership. CRRL is noncommercial, and no one who could gain financially by the shaping of its affairs is eligible for membership on its Board.

CRRL is the Canadian member-society of the International Amateur Radio Union (IARU). "Of, by and for the Canadian Radio Amateur", CRRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement in amateur affairs.

A bona fide interest in Amateur Radio is the only essential requirement for membership. An Amateur Radio licence is not required, although full voting membership is granted only to licensed amateurs in Canada.

Membership inquiries and general correspondence should be directed to CRRL Headquarters, Box 56, Arva, ON NOM 1C0 Tel (519) 660-1200.

Officers and Directors President: Bruce Balla, VE2QO CP 876, Succ B, Montreal, PQ H3B 3K5

(514) 623-1303

Honorary Vice Presidents:
Thomas Atkins, VE3CDM
Noel Eaton, VE3CJ
Vice President: Harry MacLean, VE3GRO

500 Riverside Dr. London, ON N6H 2R7 (519) 473-1668

Vice President: Dana Shtun, VE3DSS

500 Willard Ave, Toronto, ON M6S 3R6 (416) 763-1761 Vice Pres Int'l Affairs: George Spencer, VE3AGS R R 1, Jordan, ON LOR 1S0 (416) 562-4891

Secretary-Treasurer: William Loucks, VE3AR 155 Brentwood Rd N, Toronto, ON M8X 2C8 (416) 231-8474

Alberta Director: Ken Oelke, VE6AFO\* 7136 Temple Dr NE, Calgary, AB T1Y 4E7 (403) 280-5340 Atlantic Director: Carl Anderson, VE1UU\* 25 Lawnsdale Dr, Dartmouth, NS B3A 2N1 (902) 469-9756

Quebec Director: Larry Dobby, VE2DO\* 157 Sedgefield, Point-Claire, PQ H9R 1N8 (514) 695-3528

Ontario North Director: Raymond Perrin, VE3FN\* 128 Withrow Ave, Nepean, ON K2G 3N7 (613) 225-8132

Ontario South Director: George Gorsline, VE3YV 118 MacPherson Ave, Toronto, ON M5R 1W8 (416) 921-4214

Midwest Director: Dave Snydal, VE4XN\* 25 Queens Cr, Brandon, MB R7B 1G1 (204) 728-2463

Pacific Director: David Fancy, VE7EWI\* 14455 104A Ave, Surrey, BC V3R 1R2 (604) 584-6517

#### Section Managers

Alberta: Don Wilcox, VE6CG 940 Marpole Rd NE, Calgary, AB T2A 4E3 (403) unlisted

British Columbia: Ernest Savage, VE7FB 4553 West 12th Ave, Vancouver, BC V6R 2R4 (604) 224-5226

Manitoba: William G Crooks, VE4JR 431 Hillary Cr, Winnipeg, MB R2Y 0Z1 (204) 837-9509

Maritimes-Newfoundland: Carl Anderson, VE1UU 25 Lawnsdale Dr, Dartmouth, NS B3A 2N1 (902) 469-9756

Ontario: Larry Thivierge, VE3GT 34 Bruce St W, Renfrew, ON K7V 3W1 (613) 432-5967

Quebec: Harold Moreau, VE2BP 80 rue Principale, St-Simon Co, Bagot, PQ J0H 1Y0 (514) 798-2173

Saskatchewan: Joan Lloyd, VE5JML 1655 Garnet Street, Regina, SK S4T 2Z1 (306) 525-2605

General Manager: Raymond Staines, VE3ZJ Field Services Manager: Jack Strangleman, VE3GV 512 Pinetree Ave, London, ON N6H 3N1 (519) 471-2301

Awards Manager: Garry Hammond, VE3XN 5 McLaren Ave, Listowel, ON N4W 3K1 (519) 291-4813

Central Incoming QSL Bureau Manager: Don Welling, VE1WF Box 51, Saint John, NB E2L 3X1

Outgoing QSL Bureau Manager:

John Henderson, VE3HFT
Box 56, Arva, ON NOM 1C0
General Counsel: Timothy S Ellam, VE6SH
Suite 1600, 530 8 Avenue SW, Calgary, AB T2P 3S8 (403) 234-7200

Honorary Counsel: B Robert Benson, QC.

\*Voting member, CRRL Board of Directors

#### Calendar



Attention: Deadline for items is the 20th of the second month preceding month of publication. For example, information should reach QST Canada by January 20 to be included in a March issue.

Calgary, AB: Seventh Annual Fleamarket, September 14 at Parkhill Community Centre, 4013 Stanley Rd SW. Sponsored by Novatel ARC (NARC). Opens at 0900. Admission \$3. Tables \$4. Talk-in on VE6NRC, 146.76 MHz (-) and on 146.52-MHz simplex. For more information, contact NARC at 1020 64th Ave NE, Calgary, AB T2E 7V8.

Ancaster, ON: Ninth Annual Fleamarket, September 14 at Marritt Hall, Ancaster Fairgrounds, 625 Highway 53 East. Sponsored by Hamilton ARC. Opens at 0900, 0730 for vendors. Admission \$4. Indoor tables \$8, indoor commercial tables \$10, outdoor tables \$4—all plus admission. Talk-in on VE3NCF, 146.76 (–). For more information, contact Stan Bolibruch, VE3GFE, Box 91215, Effort Square Postal Station, Hamilton, ON L8N 4G4, Tel (416) 528-4002

Côte St-Luc, PQ: Hamfest '91, October 19, at St Richards Church, 707 Guelph Rd, Côte St-Luc (Montreal). Opens at 0900, 0800 for vendors. Admission \$2. Tables \$12, includes one admission. Talk-in on VE2RED, 147.27 MHz (+). For more information, contact Joe Ship, VE2JS, 5637 Melling Ave, Côte St-Luc, PQ H4W 2C1, Tel (514) 482-

Greenwood, NS: Third Annual Ham and Electronics Fleamarket, October 26, at Gilwell Hall, Bedford Rd off Ward Rd. Sponsored by Greenwood ARC. Odds 'n ends table, refreshments. Opens at 0900. Admission \$2. Tables \$5, commercial tables \$10. Talk-in on VE1WN, 147.24 MHz (+), and VE1AEH, 147.18 (+). For more information, contact Lance Peterson, VE1VCL, Greenwood ARC, Box 63, Greenwood, NS B0P 1N0, Tel (902) 765-6053.

London, ON: Fourteenth Annual Fleamarket, September 29 at Pot O'Gold Bingo Palace, Hamilton Rd at Gore Rd. Sponsored by London ARC. Large indoor sales area, commercial displays, snack bar. Opens at 0900, 0800 for vendors. Admission \$4. Tables \$5. Talk-in on VE3LON, 147.06 MHz (+). For tables or more information, contact Dave Noon, VE3IAE, Box 82, Station B, London, ON N6A 4V3, Tel (519) 453-2292.

Tappen, BC: Mini-Hamfest, September 6-8. Sponsored by Salmon Arm Seniors ARC. Corn roast, dance, fleamarket, games, pancake breakfast, free RV parking. Talk-in on 147.02 MHz (+). For more information, contact Hans Berls, VE7BOD, R R 1, Tappen, BC V0E 2X0, Tel (604) 835-8324.

## Getting Started in Foxhunting

Foxhunting is lots of fun! Here is how it's done...

By Manfred Zielinsky, VE3ZIE 104 King St South St Jacob's, ON NOB 2NO

mateur Radio direction finding is as old as Amateur Radio. In the 1920s, Swiss amateurs made propagation experiments using "window antennas" which had good directivity. Gradually, a real sport-foxhuntingwas developed. Transmitters were hidden in rural areas and direction finding techniques were used to find their locations. In the early days HF was used exclusively. Today, two metres is used internationally, although 80-metre direction finding is becoming popular in Europe again.

IARU has worked out the rules. In a modern foxhunt, five transmitters-the foxes-are hidden in an area. Each transmits sends a distinctive code for one minute: MOE, MOI, MOS, MOH, or MO5 (note the progression of Morse code dots in the final letters and numeral).

The area of the foxhunt is usually treed, with a difference in elevation of not more than 200 metres. There should be no railway tracks, no water mains, no power lines, and no highways within the foxhunt area. Transmitters should be placed no less than 750 metres apart, and the total distance of the foxhunt course from start to finish should be four to six kilometres.

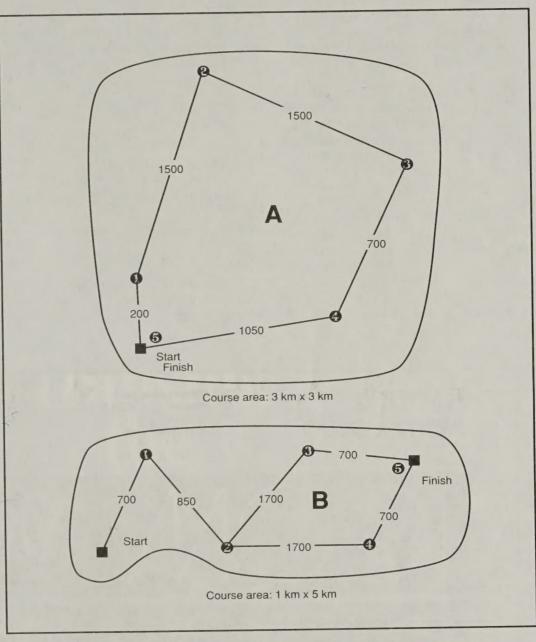
Foxes are hidden so they are not visible from a distance of more than three to five metres. Foxes cannot be placed in buildings or in a fenced yard. Antennas for two metres should be horizontally polarized, omnidirectional, and placed 1.0–1.25 metres above the ground.

#### **A Typical Course**

Let's look at a typical course. In example A, the start and finish lines are at the edge of the forest. They could have been placed inside the forest as long as arriving or departing fox hunters were visible for only short periods of time. Total distance of this course is approximately five kilometres, but with the inevitable backtracking, each fox hunter would probably end up walking six to eight kilometres. Total time needed to complete this course would be about two hours. This is a round course. With the start and finish lines in a single location, the foxhunt could be managed by a single crew.

#### How Do You Find the Fox?

You will need a receiver with a signalstrength meter, an antenna with good directivity, a compass, a punch card if that is what foxhunt organizers are using, and



Two typical foxhunt courses. Unless otherwise specified, figures are in metres.

good spirit. You will also need a detailed map of the area. (Of course, the foxes will not be marked on it, hi.)

Once you are allowed to start, listen for the foxes. Find the direction with your receiver, read the bearings off your compass, read the strength of the signal, and mark the information on your map. You will probably head for the strongest signal first. Look at your map to find a walkway and head for your fox. It will be transmitting for one-minute at five-minute intervals, so be ready to take new bearings whenever it comes on, and to mark the new information on your map. Once you have recorded your information from two or three different locations, your map

should show you where the fox is hidden. With a little luck you'll find it-and a distinctive hole punch or tearoff card. Punch your card or remove a stub from the tearoff card. Now, listen for the remaining foxes and follow whole procedure again. When you have found all the foxes, make a dash for the finish line where foxhunt organizers will record your time.

#### **Sounds Complicated?**

It really isn't, and it is a lot of fun. But if you're not good with map and compass, start off the easy way: Just listen for the strongest signal, use your receiver to find the direction it's coming from, and walk in that direction. When your fox transmits again, find the new direction and continue walking.

The signal should become stronger as you approach the fox, and you will have to reduce the RF gain of your receiver when the fox comes on. (If not, you are walking around in circles, hi.) Eventually the signal will become very loud, almost a scream, and you will have to reduce the RF gain to almost zero. Now it's time to really hunt the fox, down to the last metre, and there it is—the antenna with the hole punch or tearoff stub.

Take a deep breath and go for the next fox.... Good luck!

Manfred Zielinsky, VE3ZIE, is owner of MAS Enterprises, which specializes in foxhunt equipment. The FHR-200 Foxhunt Receiver is a double-conversion superhet for 2-metre FM. It features a manual RF gain control with a range of 110 dB, and a signal-strength meter. It is powered by a 9-volt battery. The HB9-200 Foxhunt Antenna features flexible director and reflector ends for safety, 4-dB gain and a 20-dB front-to-back ratio. For more information, contact MAS Enterprises, 104 King St South, St Jacob's, ON NOB 2NO, Tel (519) 664-1273, Fax (519) 664-3082.

#### CANADIAN LADIES AMATEUR RADIO ASSOCIATION



We invite all YLs in our reading audience to join our coast-to-coast organization. CLARA members can be heard weekly from

September to June Tuesdays at 1700 UTC 14.120 MHz Come and join us!

For registration information, please write to CLARA Treasurer Muriel Foisy, VE7LQH, R. R. 1, Pender Jsland, BC VON 2MO

#### **MOVING?**

For interrupted delivery of *QST* and *QST* Canada, please send your change of address notice to CRRL, Box 56, Arva,

ON NOM 1C0 eight weeks before you move. Don't forget to quote your callsign or the seven-digit number on your mailing label. —Ray Staines, VE3ZJ



Digital Signal Processing

**Digital Signal Processing** Without DSP With DSP

S-9508 "DX-clusive" HF Transceiver



The new TS-950SD is the first Amateur Radio transceiver to utilize Digital Signal Processing (DSP), a high voltage final amplifier, dual fluorescent tube digital display and digital meter with a peak-hold function.

- Digital Signal Processor DSP is a state-of-the-art technique that maximizes your transmitted RF energy. Your signal stands out because it i much more pure than your competition! You can even tailor your transmitted CW or voice signal waveshape!
- Dual Frequency Receive Function The TS-950SD can receive two frequencies simultaneously. The subreceiver has independent controls for frequency step size, noise blanker, and AF gain and its own digital display!
- New! Digital AF filter. Synchronized with SSB IF slope tuning, the digital AF filter provides sharp characteristics for optimum filter response
- New high voltage final amplifier. 50V power transistors are used in the 150W final section, resulting in minimum distortion and higher efficiency. Full
- New! Built-in microprocessor controlled automatic antenna tuner. The new antenna tuner is faster and you can store the settings in memory! (Manual override is also possible.)

- Outstanding general coverage receiver performance and sensitivity. Kenwood's Dyna-Mix™ high sensitivity direct mixing system provides incredible performance from 100 kHz to 30 MHz. The Intermodulation dynamic
- range is 105 dB. Multi-Drive Band Pass Filter (BPF) circuitry. Fifteen band pass filters are available in the front end to enhance performance.
- power key-down time exceeds one hour. High performance IF filters built-in. Select various filter combinations from the front panel. For CW: 250 and 500 Hz, 2.4 kHz for SSB, and 6 kHz for AM. Filter selections can be stored in memory!

- Kenwood interference reduction SSB Slope Tuning, CW VBT (Variable Bandwidth Tuning), CW AF tune, IF notch filter, dual- mode noise blanker with level control, 4-step RF attenuator (10, 20, or 30 dB), switch able AGC circuit, and all-mode squelch.
- Built-in TCXO for highest stability.
- Built-in electronic keyer circuit.
- 100 memory channels. Store independent transmit and receive frequencies, mode, filter data, auto-tuner data and CTCSS frequency.
- Digital bar meter.

Additional Features: • Built-in interface for computer control - Programmable tone encoder • Optional VS-2 voice synthesizer · Built-in heavy duty AC power supply and speaker · Adjustable VFO tuning torque . Multiple scanning functions . MC-43S hand microphone supplied

KENWOOD U.S.A. CORPORATION COMMUNICATIONS & TEST EQUIPMENT GROUP P.O. BOX 22745, 2201 E. Dominguez Street Long Beach, CA 90801-5745

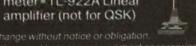
KENWOOD ELECTRONICS CANADA INC. P.O. BOX 1075, 959 Gana Court Mississauga, Ontario, Canada L4T 4C2

... pacesetter in Amateur Radio

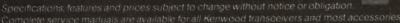
**Optional Accessories** 

- VS-2 Voice synthesizer
- SP-950 External speaker w/AF filter • SM-230 Sta-

tion monitor w/pan display • SW-2100 SWR/power meter • TL-922A Linear







#### Equipement Radio AmateuR



#### HF TRANSCEIVERS

FT-1000D	\$ 4 499.00
FT-990	
FT-767GX	
FT-757GX/II	
FT-747GX	\$ 840.00
FT-650	

#### VHF/UHF MOBILES

FT-4700RHT	\$ 699.00
FT-2400H	\$ 429.00
FT-5200 / B8	\$ 759.00
FT-6200 / B8	\$ 929.00

#### **VHF/UHF BASE STATION**

FT-736R.....\$ 1 999.00

#### VHF/UHF PORTATIF

TWO A CIA F		
FT-26/25	\$	339.00
FT-26/27	\$	369.00
FT-76/25	\$	379.00
FT-411E	\$	359.00
FT-470	2	459.00



FT-1000D

FT-470

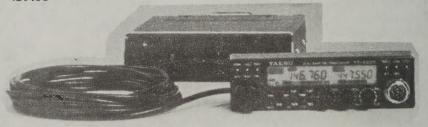
FT-2400H





FT-5200 Series

#### **YAESU**



SEPTEMBRE / SEPTEMBER 1991
Depositaire Autorise / Authorized Dealer
Prix sujet a changement sans preavis / Price subject to change whithout notice

PRODUITS ELECTRONIQUES





2435 blvd. des Recollets Trois-Rivieres P. Que. G8Z 4G1 <u>Tel. (819) 378-5457</u> Fax. (819) 378-0269

Mardi-mercredi (9h-17h) jeudi-vendredi (9h-21h) samedi (10h-15h)

## **Perrin Beatty Visits Field Day**

The Minister of Communications gets a first-hand look at Amateur Radio.

By Barry Lennox, VE3AOI

OLLINGWOOD, ONTARIO-On June 22, the Honourable Perrin Beatty, Minister of Communications, was a special visitor at Field Day activities of the Blue Mountrain Repeater Association and Amateur Radio Club. The Blue Mountain group, operating under the callsign VE3MTR, had set up Field Day operations on a plateau overlooking Georgian Bay, ten kilometres west of the central Ontario resort community of Collingwood.

Amateur Radio is just one of the many areas that fall within the jurisdiction of the communications ministry. The Field Day visit was the minister's first opportunity to observe an Amateur Radio emergency communications exercise first hand since assuming the communications portfolio after changes to to the federal cabinet in the spring. Mr. Beatty also serves as Member of Parliament for the constituency of Wellington-Grey-Dufferin-Simcoe. He previously held cabinet posts as Minister of Defence and Minister of Health.

The Field Day exercises attracted both newspaper and television coverage including a television interview which was aired on the 11 p.m. news that night. "If a real emergency was to take place," Mr Beatty told the television audience, "these Amateur Radio operators would be able to get emergency communications up and running. There have been a number of instances where Amateur Radio operators have contributed enormously to the public safety and the public service."

The Minister was welcomed to the Field Day site by Terry Darling, VE3CAB, licensee of the VE3MTR repeater and on whose farm the Field Day site was located. Barry Lennox, VE3AOI, a director of the Blue Mountain Repeater Association, provided the minister with a tour of the site which included a satellite station, a packet station, a 2-metre station for talk-in through the VE3MTR repeater, and three HF stations.

Mr. Beatty was particularly impressed with the skill of the operators at the 15metre station. Main operator at the time was Devon Wilkins, VE3DEV, who is blind. Logging for Devon was Andrew Aramagost, VE3YHC, a 12-year old recently-licensed amateur.

At the conclusion of the visit, Mr. Beatty thanked association members for their hospitality and praised their efforts in preparing for any eventuality.

'As Minister of Communications, I am very struck by how fortunate we are in Canada to have people across the country who are knowledgeable about radio communications and have this tremendous sense of committment," Mr. Beatty said. "When you look at a Canada, which geographically is the second largest country in the world but with a thinly scattered population, having people involved in all regions of the country who have the skills, knowledge, background and equipment that you folks have is something very special and something that serves all of us Canadians very well.'



Barrie Lennox, VE3AOI, with The Honourable Perrin Beatty, Minister of Communications, during the minister's visit to the Blue Mountain Repeater Association's Field Day site. It was the minister's first exposure to an Amateur Radio emergency communications exercise since he assumed the communications portfolio in the spring



The Minister of Communications discusses Amateur Radio with blind amateur Devon Wilkins, VE3DEV. Devon operated the 15-metre station.

#### **IARU** Region 2 Executive Committee Prepares for WARC-92

The 1991 meeting of the IARU Region 2 Executive Committee was held in Grand Cayman, Cayman Islands, on August 11-12. It was chaired by Region 2 President Alberto Shaio, HK3DEU. Attending the meeting: Region 2 Vice President Fabian Zarrabe, YS1FI; Secretary Tom Atkins, VE3CDM; Treasurer Steve Dunkerly, VP9IM; and Area Directors Frank Butler, W4RH, Guillermo Nunez, XE1NJ, Willy Gravenhorst, PJ2WG, Alfonso Caldernon, OA4PQ, and Reinaldo Szama, LU2AH. Also present: Past Region 2 President Pedro Seidemann, YV5BPG, who is currently Director of Region 2 Preparations for the World Conference Administrative Radio (WARC) to be held in Spain in 1992; and Region 1 Secretary John Allaway, G3FKM, and IARU Secretary Larry Price, W4RA, both of whom participated as observers.

The comprehensive agenda took two days to cover. Detailed preparations to meet the challenge of the forthcoming WARC -92 occupied a significant part of the time. WARC items included a full report by YV5BPG, ongoing visits to Region 2 telecommunication administrations, CCIR, and the composition of IARU's WARC-92 Observer Team.

Other subjects covered included band planning, the need for greater occupancy of the 18- and 24-MHz bands, the IARU beacon project, emergency communications, third-party traffic agreements, responsibilities of Region 2 member societies, responsibilities of Area Directors. Fred Laun, K2ZO, was commended for his work as editor of *Region 2 News*.

The treasurer reported heavy expenditures in connection with WARC-92, particularly for visits to telecommunications administrations. He indicated that the 1991 Region 2 dues notices would be sent to all member-societies in September and requested each society's cooperation in prompt payment of membership dues.

A reminder to all amateurs that the Region 2 WARC-92 Fund is seeking contributions. Individual donations of US \$50 and club donations of US \$100 will be acknowledged with special lapel pins. There is also provision for contributions by non-amateurs with a special certificate for donations of US \$1000 or more. Send donations directly to IARU Region 2 Treasurer Steve Dunkerly, VP9IM, Box HM 2215, Hamilton, Bermuda.

The Region 2 Executive Committee announced that W. L. "Gib" Gibson, W7JIE, had retired as coordinator of the IARU Monitoring Service ("Intruder



When have you ever seen so many smiling CRRL and CARF people together in one place? In the foreground CRRL President Bruce Balla, VE2QO (left), shakes hands with CARF President Farrell "Hoppy" Hopwood, VE7RD, after the joint meeting of the CRRL and CARF boards of directors, held in Cobourg, Ontario, on June 2. (VE3DSS photo)

Watch"), a post he had held for 11 years. Mark Allen, WJ7X of Chanassen, Minnesota, was named as Gib's replacement.

Special thanks to Roger Corbin, ZF1RC, who made the arrangements for this meeting, and to officials of the Cayman Amateur Radio Society for their hospitality and support. —Tom Atkins, VE3CDM, Secretary, IARU Region 2

#### **NEW RECIPROCAL WITH SPAIN**

□ DOC has announced that, on June 17, a reciprocal operating agreement was signed with Spain, and that DOC is in the process of negotiating similar agreements with Gambia, Kenya, Lesotho, Mauritania and Monaco. More later.

#### **CRRL NOTES**

CRRL has just published an updated edition of the *DOC Questions Bank Book*. As with previous editions, the new *DOC Question Bank Book* includes not only questions, but response sheets and answers, making it a real teaching tool. Cost: \$11 plus postage and GST. Order through the CRRL Bookshelf on page 12 of this *QST Canada*.

☐ A reminder that Canada Post has advised CRRL that on 1991 September 6, Canada Post will close London, Ontario's Postal Station E. Starting immediately, please use the new CRRL address: CRRL, Box 56, Arva, ON NOM 1C0.

☐ In case you missed the note in last

month's *QST Canada*, Canada Post also advised that a shipment of mail scheduled to arrive at the Arva, Ontario, post office on the weekend of June 22-23 was stolen. Canada Post has no way of knowing what the shipment contained. If you wrote to CRRL in a time frame that would suggest that your letter was in that shipment, and you have not had a reply from CRRL, please contact CRRL as soon as possible.

#### **ARRL NOTES**

☐ Good news for contesters in Canada's Atlantic Region: The ARRL Awards Committee has accepted a recommendation from the ARRL Contest Advisory Committee that, for the ARRL International DX Contests, the current VE1 and VO multipliers be split into five multipliers: New Brunswick (VE1), Nova Scotia (VE1), Newfoundland (VO1), Labrador (VO2), And Prince Edward Island (VE1 or VY2). This makes 62 multipliers available to DX participants instead of the present 59, and makes the multiplier structure of the ARRL International DX Contest consistent with the multiplier structure of the ARRL 10-Metre Contest.

In other DX news, the ARRL DX Advisory Committee has recommended that North Korea be counted as a separate DXCC country. Still to be voted on by September 30: Jarvis Island.

☐ The 10th ARRL Amateur Radio Computer Networking Conference will be held

at the Radisson Hotel, San Jose, California, on September 27-29. For more information, contact Glen Tennet, AA6ER, Fantasia Systems, Inc., 211 Ensenada Way, San Mateo, CA 94403, Tel (415) 574-3420, Fax (415) 574-0546. As a side note, last year's conference was co-sponsored by CRRL and held in London, Ontario. It attracted 134 amateurs from Canada, the US and Europe.

#### NOTES FROM ALL OVER

☐ To commemorate the Anniversary of the Battle of Lake Erie and the 178 years of US-Canada friendship that followed, WD8LKI and members of the Oliver Hazard Perry Expeditionary Force will operate KB8N from Perry's Victory and International Peace Memorial, Put-in-Bay, Ohio, on September 6. Look for KB8N on 3.965, 14.265, 21.265 and 28.365 MHz. A special certificate will be available.

☐ The Ontario Science Centre (OSC) in Toronto is looking for volunteers to operate VE3OSC daily, September 13-January 5. The station is being reactivated to maintain contact with stations in the Arctic during a Soviet exhibition: Siberia: Northern Discovery and Survival. Interested? Contact Diane Young, OSC, 770 Don Mills Road, Don Mills, ON M3C 1T3, Tel (416) 429-4100 Extension 533.

Once again, on October 27–November 3, special-event station ON4CLM (Canadian Liberation Movement) will commemorate the liberation of Knokke, Belguim, on 1944 November 1. This year's ON4CLM award honours the Algonquin Regiment, one of nine Canadian regiments involved in the liberation. Cost of the award is \$5 or ten IRCs, with all proceeds going to a fund used to maintain memorials and commemoratative displays. Look for ON4CLM on the following frequencies: SSB-3.685, 7.045, 14.145, 21.245 and 28.545 MHz; CW-3.515, 7.012, 14.020, 21.020 and 28.020 MHz. To order the award, write to ON4CLM, Box 110, B-8300 Knokke Heist, Belguim.

☐ Amateurs in the former Democratic Republic of Germany will soon receive new DL prefixes. To celebrate 25 years of independence, amateurs in Botswana will be using special prefixes, A25 and A26, throughout September and October. Special QSL cards will be available.

#### CRRL AMATEUR OF THE YEAR

☐ Nominations are now open for CRRL Amateur of the Year. This award is given annually to a Canadian amateur to recognize a specific achievement in a given year, or to recognize exemplary service to the Amateur Radio community over a number of years. Please send your nomination with supporting documentation, by September 30, to the CRRL Secretary, Box 56, Arva, ON NOM 1C0.

#### 1991 CRRL Fall VHF-UHF Sprints

General: These are short contests. All modes are permitted. Operation must conform to CRRL and ARRL band plans. Use of 146.52 MHz or repeaters is not permitted. Results will be published in an upcoming QST Canada. Plan to join in the fun!

Times: All sprints except the 50-MHz sprint-1900-0000 local time. 50-MHz sprint-0600-0000 local time.

Dates: 902-3456 MHz-September 26; 432 MHz-October 2; 222 MHz—October 8; 144 MHz—October 14; and 50 MHz—October 26

Scoring: Separate scoring and logs for each band including 902, 1296, 2304 and 3456 MHz. Count one point per contact. Final score per bandtotal number of contacts multiplied by the number of grid squares contacted. Submit log sheets and score summaries, by 1991 November 30, to Dana Shtun, VE3DSS, 500 Willard Ave, Toronto, ON M6S 3R6. ■



Meet your match with AEA's QT-1 and ET-1 Antenna Tuners. High-quality construction, low cost and excellent value set these tuners apart from the competition.

A good quality, economical antenna tuner for under \$130, the ET-1 is designed to match virtually any receiver, transmitter or transceiver from 1.8 to 30 MHz with up to 300 watts of RF power.

The QT-1 has the same features as the ET-1, plus a built-in dummy load, a peak or average reading meter, and a meter light.

The QT-1 and ET-1 are compatible with almost ANY real antenna including verticals, dipoles, inverted vees, beams and mobile whips that are fed by coax cable, balanced lines or a single wire. For easy connection to balanced lines, a 1:4 balun is built-in.

Both tuners feature front panel switch control which allows you to alternate between two coax-fed antennas (direct or through the tuner). You can also switch to a balanced line or wire antenna. The BYPASS position allows you to switch to a directly-connected coax antenna. In the DIRECT positions, COAX 1 OUT or COAX 2 OUT, the tuner is bypassed, but the SWR/Power meter remains active.

The QT-1 also has switch positions for the dummy load (tuned or direct).

The QT-1 and ET-1 both feature a precision dual- movement meter to simultaneously monitor power and SWR.

Unique engineering designs have made AEA one of the leading innovators in the amateur radio industry. That same quality and superior technical support make the ET-1 your best deal for an antenna tuner. Like other AEA products, the ET-1 cabinet is chemically treated so the paint will not scratch or chip off with your fingernail during normal operation.

#### Specifications (Typical)

RF Power: 3.5 to 30 MHz, continuous 300 watts;

150 W on 1.8 MHz

Frequency Range: 1.8 to 30 MHz

Transmitter/Antenna Tuning: Continuous rotation capacitors

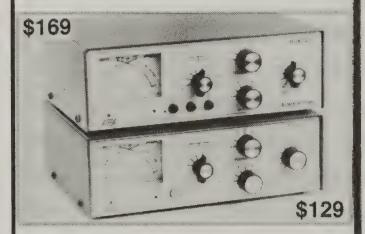
Reactance: 12-position switched inductor

Antenna Selector: Six positions: COAX 1 tuned and DIRECT, COAX 2 tuned and DIRECT, bypass and balanced antenna

Power Switch: High and low (300W/30W)

Dimensions: 10.2"(259mm)W x 9.4"(239mm)D x 3.5"(89mm)H

Weight: 3.4 lbs.(1.5kg)



**REMEMBER!** We will match any advertised price, and we have the stock and service to back it up!

#### NEW KENWOOD TS-450SAT

Kenwood's latest HF rig. Available in 2 models, the TS-450SAT covers 50 690S also covers the 50 Mhz band (6 Metres). The TS-690S runs an outs Metres. Both units are triple conversion with Kenwood's "Advanced Int give you greatly improved dynamic range. This results in a greatly rec clearer reception. Intermodulation dynamic range is no less than 108d 450's, a unique cable will allow a master/slave operation. Information passed to the other.

REC/SEND switch

20dB ATT(Attenuator)switch

VOX/OFF switch

POWER switch

THRU/AUTO switch

THRU.The auto antenna tuner is not used in transmit. AUTO:The auto antenna tuner is used in transmit

MODE keys (LSB/USB, CW/FSK, FM/AM)

**F.LOCK key**The selected dial frequency and mode are locked.

1420000<u>~</u>~~

CLR(Clear) key

M.IN key

Used to enter data into a memory channel.

M ▶ VFO key
Used to transfer a frequency from memory to the VFO.

ENT(Enter) key

SCAN key
Pressing during VFO operation
will initiate program scan, and
pressing during memory operation will initiate memory

AIP(Advar

RIT/

#### NEW\_KENWOOD TM-741A N

Kenwood's latest mobile radio. The TM-741A comes shipped with 144 M Optional modules allow you to install 28 Mhz, 50 Mhz, 220 Mhz, & 1. remote cable kit, you can mount the front control panel in some small locating the RF deck in or truck, or under your seat. The TM-741A ha modication will allow cross-band repeat. The 144 Mhz module will a (108 - 136 Mhz) in AM mode.

Used to select the MR (Memory Recall) mode from the VFO mode of CALL channel mode



selections are possible.

TONE/T.ALT Key Causes the radio to select the desired tone signalling mode (T. CTCSS, OFF). Activates the T.ALT function.

DTSS/ALT Key Pressing this key selects the desired tone signaling mode (DTSS, Paging, or off) (Optional DTU-2 is required). Causes the ALT function of the 1200 MHz band

to activate.

MUTE/ABC key Used to lower the receive audio level by -20 dB. Pressing this key will toggle the ABC function on or off.

VOL controls (Rotate)

#### **'S-690S)**

z-30 MHz, while the TSing 100 watts on 6 t Point" circuit design that noise floor level for you work with 2 TSne TS-450SAT can be

AF gain control - RF gain control

NOTCH control - SQL control

trol - IF SHIFT control



PWR(Power)

MIC gain control

CAR(Carrier level) control

AY control cey

For CW, FSK and data communications For SSB and AM

l kev

ercept Point) key

#### ltibander

nd 440 Mhz installed. z. Also, with the optional convient location, while memories per band and a ceive the Aircraft band

CONTROL SELECT keys (Press)/Current Operating Band indicators Used to select the operating band. (To change the transmission band, use the BAND SELECT key.) The green light shows which band will be controlled by the front panel controls

Release button
Slide this button to the
right to unlock the front
panel from the chassis.

SQL (Squeich) controls
Used to separately adjust the each squeich threshold level.

#### YAESU FT-212RH

Yaesu's popular 2 Meter mobile. 45 Watts out and great performance. There are 18 general purpose memories and a one-touch recall CALL channel memory and two subband limit memories (for programmable subband scanning). One touch repeater reverse; band and selected memory scanning with auto-resume after carrier-drop or 5 second pause, and priority channel monitoring. A LARGE LCD display includes a bargraph PO/S-meter. Ambient light is sensed to automatically control the brightness of the display back-lighting and pilot lamps, dimming the display in dark environ-



#### **KENWOOD TM-702A**

The TM-702A combines two radios into one compact package. You get 25 Watts on 2 meters and 70 cm, dual receiver, DTSS pager, 20 memory channels tone alert, multiscanning and a host of additional features. The new TM-702A is designed to be the ultimate compact, lightweight dual-band transceiver in a mono-band size package. It measures only 5.51"(W) x 7.87"(D) x 1.57"(H), and weighs only 3.09 pounds.



#### **SPECIAL \* SPECIAL**

ICOM IC-735 HF Xcvr ...... \$1450 AT-150 Auto Antenna Tuner .. \$589 PS-55 Power Supply ......\$299 SM-8 Desk Mic ......\$119 Total ..... \$2457

Special Price ......\$1999 You Save .....\$458

\*\*SPECIAL\*\*

#### Now Open Mondays!

#### A WORD ABOUT G.S.T.:

All prices are quoted without GST. All Canadian residents, but not including Ontario, add 7% GST after adding the 2% shipping. Ontario residents add 2% shipping, then add 7% GST, then add 8% PST calculated on the same total as the GST (ie-PST is not payable on GST only on total plus shipping) in most cases, except books and some smaller items, the total cost will be about the same as before GST.

#### NTIC HAM RADIO

10a.m.-6p.m. Mon-Fri 10a.m.-2p.m. Saturdays After 7p.m. call (416) 222-2506 24-Hour Fax (416) 631-0747

368 WILSON AVE. DOWNSVIEW, ONT. CANADA M3H 1S9 (416) 636-3636

## THE CRRL BOOKSHELF

19.00 11.00 11.25 11.25 11.25 23.00	1.60 1.50 1.25 1.25	1000 🗆 1011 🗀 1200 🗀	ARRL Antenna Book 16th Edition Antenna Compendium Vol.1	24.00	2.50	4001
11.25 11.25 11.25	1.25		nintenna compenatum vol. i	11.25	1.10	4010
11.25 11.25		17181 1 1	Antenna Compendium Vol.2	13.50	1.10	4020
11.25	1 7.1	1210	RSGB HF Antennas for All Locations	17.00	1.30	4300 🗆
	1.25	1220 🗆	Antenna Notebook, W1FB	11.25	1.10	4030 🗆
73.00	1.10	2000 🗆	Novice Antenna Notebook, W1FB	9.50	1.10	4040 🗆
20.00	1.10		Simple Low Cost Wire Antennas	13.50	1.10	4210 🗆
4.05	4.00	2002	Antenna Impedance Matching	17.00 22.50	1.30	4050 □ 4060 □
						4090
					1.30	4070 🗆
			All About Beam Antennas	13.50	1.10	4240 🗆
	.80	3020 🗆	All About Cubical Quads			4220 🗆
						4230
2.00	00	1000 [77]	Yagi Antenna Design	17.00	1.30	4080 🗆
,			TECHNICAL BOOKS			
,				28.00	2.50	5000 🗆
		1530 🗆	ARRL Electronics Data Book	13.50	1.10	5010 🗆
) 1.00	.80	1590 🗆	Radio Frequency interference	5.75	.80	5020 🗆
						5070
7 35 00	2 25	2700 [7				5030 == 5040 ==
						5050
		1700 🗆			1.30	5060 🗆
) 16.00	2.00	1710 🗆				
2.00	1.50	1730 🗆		47.00	0.05	5500 T
						5500 🗆
						5510 □ 5520 □
,						5540
			Hansmitter Hanting	21.00	1.00	0010
7.75	*3.50	3100 🗆	PACKET/COMPUTERS			
7.75	*3.50	3110 🗆	Gateway to Packet Radio 2nd Edition	13.50	1.10	6000 🗆
			Proceedings 9th Conference	13.50	1.10	6010 🗆
			OPP			
is.ou postage on	ly tince pe	i viuci.		7.25	1.10	3500 🗆
				13.50	1.10	3510
13.50	1.10	6500 🗆				
			MISCELLANEOUS	5.05	00	7000
			**			7000
						7010 🗆 7020 🗆
						7200
				27.00	2.25	7210 🗆
	3.00 2.00 4.00 1.00 36.00 36.00 10.00 15.00 1.50 1.50 1.50 7.25 14.50 7.75 7.75 0.00 3.50 postage on	7.25	7.25	7.25	1.25	Practical Wire Antennas   16.75   1.30

#### The CRRL Field Organization Forum

#### **REPORTS FOR JUNE 1991**

Alberta: SM: Don Wilcox, VE6CG; STM: VE6AKY; SEC/TC: VE6AFO; OO: VE6TY. No report available this month.

British Columbia: SM/SEC: Ernie Savage, VE7FB. British Columbia Public Service Net (BCPS, 3729 kHz) Manager Ford, VE7DDF, reports check-ins: high-180, low-55, total 3813. Ford, VE7DDF, is turning the net over to his assistant net manager, Jim VE7JN. Ford will leave BC Phone in August to become a married man and he and his bride wish to do some travelling. Ford will be checking into the net from time to time Thus, BCPS is looking for a new manager. British Columbia Emergency Net (BCEN, 3652 kHz) Manager Ferdi, VE7EJU, reports 676 June check-ins. This is Ferdi's last report for six or more months as he is off to the far north to canoe the many rivers up there. Our new net manager until he returns is Ray, VE7BCL. Ray is a regular member of BCEN. He needs your support. Please report your station activity early each month. Monthly traffic totals are falling. You can correct this by sending a simple message to anyone asking, "How's your weather or DX?" BCEN meets daily at 1700 PDT.

Manitoba: SM: Bill Crooks, VE4JR; ASM: VE4IX; STM: VE4JA, SEC: VE4PN; NMs: VE4LB, VE4IX, VE4TE. I hope that everyone had an enjoyable summer, and is all set to get back into action after vacation trips, visits or just plain sitting in the shade. Our SEC, Dave, VE4PN, ran a simulated emergency test (SET) on June 22, the first day of the Field Day. I hope the messages were not too garbled when they arrived at their destinations. Hopefully Dave will be having more of these exercises. It is good to practice handling traffic at any time. If your name is on a telephone tree, please don't let your branch down. I understand that Lloyd, VE3JJY, and Bob, VE3IDJ, are planning on stepping down as co-editors of the Dryden ARC newsletter, The Northwest Amateur. The May issue will be their last. Many thanks to Bob and Lloyd for making this publication a success. 73.

Maritimes-Newfoundland: Acting SM: Carl Anderson, VE1UU; STM: Mel Lever, VE1VX; BM: Brent Taylor, VE1JH. No report available

Ontario: Acting SM: Larry Thivierge, VE3GT @ VE3WQ; BM: VE3GSA @ VE3JF; SEC: VE3GV; STM: VE3CYR @ VE3INF; TC: VE3EGO. By now you are aware that the name of the new, single, national amateur organization will be Radio Amateurs of Canada/Radio Amateurs du Canada (RAC). I don't know about you, but it sounds like a government department. In addition, RAC is also the acronym for Railway Association of Canada, Radio Advisory Council of Canada and no doubt some other names as well. Something more appropriate might have been Canadian Amateur Radio Association. But then, I'm sure they couldn't please everyone. Congratulations to Devere, VE3AJN who takes over as Net Manager of the Ontario Phone Net (OPN) from George, VE3BDM. Best wishes to George who is off to Toronto for two years of study. Toronto's first 1296-MHz repeater is now on the air from its permanent site. Operating frequency is 1285.00 MHz (-). VE3XJ's RTTY DX total is up to 208 countries confirmed and counting.

Reports invited: CRRL Section Managers (SMs) and their Section-level assistants coordinate traffic handling, emergency communications and bulletin service across Canada. Your SM (name and address appears on page 2 of this QST Canada) welcomes reports of individual and club activities for publication in this column. Activities do not have to be related to the CRRL Field Organization or to CRRL.

VE3FXR is busy wallpapering his shack wall with some colourful operating awards including the DUF-4 and a number of awards from the USSR. VE3GSK is new editor of the Sudbury ARC newsletter. VE3IN is pleased with the results of his new antenna, an all-band quad. Field Day messages were received from the following groups: KWARC Coffee Club, Lake of the Woods ARS, Halton ARC, Kingston, Eastern Ontario ARC, Orangeville ARES, VE3ORN, Chatham Boy Scouts, Scarborough ARC, Peterborough ARC, Brampton ARES, Coverdale's Commandos, London ARC and the Brantford ARC. After a five-year wait VE3ACY is now VE3ES. VE3DVE provided Niagara Peninsula ARC with an an excellent presentation on the advantages of CW operation and getting started on the HF bands. The presentation was in ordinary language that anyone could understand, and was great for newcomers to the hobby. VHF-UHF SSB and CW activity is on the rise as amateurs across the country discover the joys of working the bands above 50 MHz. Don't forget to send reports of unusual propagation to VE3DSS for inclusion in his column in QST Canada. Membership in the Toronto FM Communications Society stands at 481 full members and 37 associate members for a total of 518.

Quebec: SM: Harold Moreau, VE2BP; STM: VE2EDO; BM: VE2ALE. Field Day was a lot of fun this year, with good weather and fair band conditions. November QST will tell the bottom line. La date du Hamfest de Drummondville n'est pas encore connue, surveillez votre poste de relais local. À St-Hyacinthe, Réjean, VE2FEP, a perdu sa tour de 52 ainsi qu'un beam et antennas lors d'un cyclone le 28 juin.

Saskatchewan: SM: Joan Lloyd, VE5JML. The 4th Annual Fleamarket, sponsored by Regina Amateur Radio Association (RARA) was held on June 1 in Lumsden. Many eyeball QSOs were held. Amateurs from Assiniboia, Moose Jaw, Yellow Creek, Saskatoon, Regina and points in southern Saskatchewan enjoyed this successful event. Field Day, June 22-23 found clubs from across the province out in force. Battleford's club was set up at Fort Battleford, the Saskatoon club outside the Western Development Museum, the Swift Current club at a site near Beverly, and the Regina club at Burnside school near Craven. Welcome to Terry, VE5TK, who has taken up his position with the Regina District Communications Canada office. Congratulations to Rebecca Landau, VE5RAL of Regina, and to Cory Seebach, VE5CAS of Saskatoon, on obtaining their licences. Cory's father is Al, VE5GAS of Assiniboia, and his grandfather is Mike, VE5MAS of Meleval, making the Seebachs the second Saskatchewan family known to have three generations of amateurs currently active. (The Babish family of Regina also has three generations active). Many Saskatchewan amateurs put their antenna projects on hold during the month. With above-average amounts of rain in

the last week of June, some people considered building arks! My QTH in Regina had nine inches of rain that week and I considered checking into the nets as "marine mobile". 73



ARES is an important part of the CRRL Field Organization, and the Emergency Coordinator (EC) is an important member of ARES. John Lester, VE3MB, is EC for Hastings County in eastern Ontario, Emergency Services Chairman for Quinte Branch Red Cross and guest conductor of this month's Public Service column. (J R Eadie photo)

#### Silent Keys

Conducted By Ray Staines, VE3ZJ

It is with deep regret that we record the passing of these amateurs:

VE3AJV, Alex Clark, Coldwater, ON VE3AMY, Ken Cairns, Campbellford, ON VE3BVQ, Albert Holmes, Waterloo, ON VE3HLQ, Mike Dorion, Rexdale, ON VE3IXY, Fred Mosher, Elmira, ON VE3JEP, George Cox, Clinton, ON VE3MNB, Will Allen, Brighton, ON VE3QOY, Kathy Pastuch, Nepean, ON VE3UL, Herbert West, St Catharines, ON VE3KA, Ron Nurnberg, Winnipeg, MB VE5FD, Charles Smith, Saskatoon, SK VE6HF, Brian Hayes, Stettler, AB VE7BUR, George Jose, Victoria, BC

Note: Silent Key reports sent to QST Canada must include name, address and callsign of the reporter. To avoid unfortunate errors, reports are confirmed only through acknowledgement from the family of the deceased. Thus, those who report a Silent Key may not receive an acknowledgement from QST Canada.

#### Radio AmateuR du Canada

## KENWOOD

#### HF TRANSCEIVERS

TS-950SD	\$ 4 320.00
TS-850SAT	\$ 1 989.00
TS-690S	\$ 1 699.00
TS-450S/ AT	\$ 1 699.00
TS-440S/ AT	\$ 1 599.00
TS-140S	\$ 1029.00

#### **VHF/UHF MOBILES**

TM-941A	\$ 1	192.00
TM-741A	\$	899.00
TM-731A	\$	699.00
TM-702A	\$	629.00
TM-241A	\$	449.00

#### VHF/UHF PORTATIF

TH-26ATAVEC CTCSS	S	329.00
TH-27A		
TH-77A		
TH-225A	\$	349.00

#### **KENWOOD**



TH-27A
TH-77A

**TS-950SD** 

SEPTEMBRE / SEPTEMBER 1991
Depositaire Autorise / Authorized Dealer
Prix sujet a changement sans preavis / Price subject to change whithout notice

#### PRODUITS ELECTRONIQUES



2435 blvd. des Recollets Trois-Rivieres P. Que. G8Z 4G1
<u>Tel. (819) 378-5457</u> Fax. (819) 378-0269

Mardi-mercredi (9h-17h) jeudi-vendredi (9h-21h) samedi (10h-15h)

#### 708AA—ou la quête de l'impossible

Suite et fin de 1991 juin QST Canada...

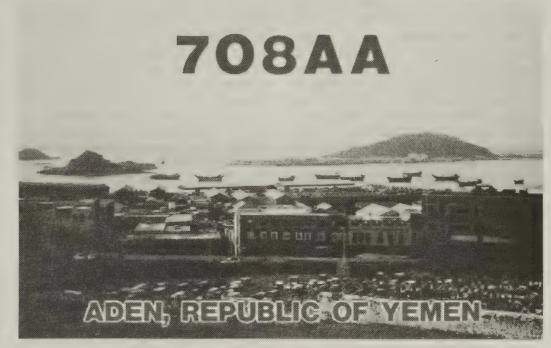
Pendant cette semaine à Djibouti, J28AA avait mis à notre disposition une voiture officielle des Nations Unies. Cela nous a permis de nous déplacer et de rendre visite aux OM's locaux. Ainsi en trois jours de trafic, nous avons réalisé 1500 QSO's, en J2ØX depuis les stations de Patrick, J28TY et Michel, J28DN. Un grand merci pour l'accueil et l'hospitalité. Nous avons aussi rencontré J28HE et J28AP et avons reçu le diplôme de Djibouti.

Le vendredi 27 juillet, J28AA et son fils nous ont emmené en brousse, au lac Assal et à Tajoura. Une merveilleuse journée, pleine d'images.

Samedi 28 juillet, à 13h30 "l'avion" de Djibouti Air Line nous emmene vers Aden... et la valise de F2VX vole vers l'Ethiopie ou la Tanzanie. À 14h00 nous sommes en 70 : la rêve est réalité. Il aura

fallu sept ans.

Mme Noor de Yemen Télécommunication Company (YTC) nous attend. Longues formalitiés lorsqu'il faut se rendre à l'évidence : la valise de F2VX n'est pas là. Enfin, vers 16h00, nous sommes installés au Gold Mohur Hotel d'Aden. Nous pensons à tous ceux qui nous recherchent déjà "sur l'air". Nos derniers QSO's remontent au jeudi soir depuis J2ØX. Le dimanche matin nous sommes à 08h00 au siège de YTC. Première rencontre avec Anwar Burhan, directeur du Radio Regulatory Department, signataire des licences radio, et avec Hamed A. K. Al'attar, responsable du Training Center. Anwar et Hamed seront les opérateurs de la station club 707AA. Après discussions et prise de contact, Anwar nous explique les zones d'indicatif de la République du Yemen, et nous attribue le premier indacatif officiel à titre de réciprocité pour les étrangers: 708AA. Nous avions décidé d'utliser un seul indicatif, pour éviter les doublons. Visite de YTC, inspection du materiel, et nous commencons immediatement à installer la beam. Nous souhaitons pouvoir trafiquer jour et nuit, or YTC ferme ses portes à 12h00 chaque jour, et bien sur le vendredi... Dans ces conditions, YTC nous propose d'installer la station à l'hôtel, de former les opérateurs, et de réinstaller le club à notre fin de séjour. Cette solution est pour nous l'idéal. Nous démontons la beam en cours d'assemblage, chargeons le matériel dans le 4x4 de YTC, et direction le Gold Mohur Hotel. Après midi à tout installer : dipole de la beam (le boom est trop grand pour pouvoir être monté sur le toit de hôtel par l'ancenseur), et tranceiver. Il



Le 708AA QSL : la quête de l'impossible devait un succès.

faut faire vite pour assembler l'antenne et tailler les coaxs, car la nuit tombe à 18h00. Enfin, tout est prêt, le tranceiver est allumé. La première station entendue est F2WU. Nous voulons lui répondre... nous n'avons pas de micro... il a disparu dans le transport, et nos manipulateurs sont bloqués en douane. Les "méninges" carburent. Où trouver un micro, et comment le brancher sur le TS-950 sans la prise. Nous envisageons même la pastille du téléphone comme autrefois chez F2VX. Puis souvenir d'une rencontre à l'aéroport avec des membres de Médecins sans Frontières (MSF), qui essayaient de faire dédouaner deux tranceivers pour leur mission... Nous partons à pied, dans la nuit, pour leur bungalow que nous avions repéré en venant de YTC. Cela tombe bien, MSF a un micro de rechange pour leur station, ils nous le prêtent. Une heure plus tard, à 21h30 7O8AA lance son premier et unique CQ: "CQ, CQ, CQ... 708AA calling... go ahead!" La première station sera EA4AV sur 21295 kHz, suivi d'un "pileup" à faire rêver les plus endurcis, début d'une longue liste de 19483 QSO's, sur les cinq bandes en SSB et CW.

Nous avons trafiqué 22 heures par jour, avec une interruption à 12h00 et une à 20h30 locales pour aller nous restaurer en ville à Aden. En effet, dès le lundi matin, le personnel de notre hôtel s'est mis en grève. Cela à duré tout le séjour. Pendant deux jours nous sommes restés à la diète en buvant l'eau de la salle de bains... alors que la "faculté" de Bordeaux nous avait mis en garde contre tout.

Heureusement, le personnel de MSF à remis les choses à leur juste place.

Dès le lundi nous organisons ce qui va être le rythme immuable de notre séjour en 708AA. Il y a toujours un opérateur actif, jour et nuit, F2VX ou F6EXV.

Le matin, vers 10h00 formation des opérateurs de 708AA, Anwar et Hamed. Ils ont réalisé une centaine de QSO's, mais quelle panique les premiers jours. À 12h00, repas à Aden, retour à la station pour 13h30. Celui qui ne trafique pas dort ou continue d'installer la station.

Les dipoles 40/80 mètres seront installés le lundi 23, l'amplificateur TL-922 mis sous tension le 24, et il nous faudra choisir entre l'ampli ou la climatisatiron de la chambre... autrement tout disjoncte. La nuit, ampli branché pour le 40/80 mètres, la température dans la chambre passe les 50 degrés C. Nous buvons des litres d'eau à longeur des temps.

Nous récupèrons les manipulateurs le 25 et Paul, F6EXV se lance dans les "pileups" CW, casque sur les oreilles, mais "hurlant" des "noms d'oiseaux" contre l'humanité entière pour tous ceux qui l'énervant. En plusieurs occasions le manipulateur a failli disparaitre par la fenêtre du 4e étage. Au bout de deux jours dans cette atmosphère, F2VX partait se baigner ou visiter Aden, quand F6EXV prenait le manipulateur. Nous espérons que tous auront su apprécier l'effort de Paul et la patience de Gérard en la matière.

Le vendredi 27, nous sommes invités à une soirée avec Médecins sans Frontières.

À conseiller à ceux qui ont vu M.A.S.H., mais à 23h00 nous sommes présents sur 7065 kHz pour contacter l'Europe et le Japon. Le dimanche 29, la valise de F2VX réapparait à l'aéroport, mais nous n'avons toujours pas le micro du TS-950. Kenwood France en expédie un deuxième ce jour pour Aden.

Nous trafiquons toujours avec un dipole fixe sur 14/21/28 MHz. De temps en temps nous montons sur le toit pour changer l'orientation, ou au contraire pour réorienter si le vent l'a fait tourner. Nous recevons les stations JA 24 heures sur 24, mais quelle discipline! En règle générale tout le monde a suivi nos consignes de trafic. Nous avons contacté 165 pays, les 40 zones, des stations "novices", des QRP avec un watt, le Pacifique, la côte ouest de l'Amerique sans trop de problèmes. Les français, soit avec la "bataille navale" du Bordeaux DX Groupe (BDXG), soit en appelant sur la "fréquence du département": ex QRZ sur la fréquence de la Sarthe pour une écoute sur 372, etc... Il faut reconnaitre que certaines "francophones" allaient plus vite que les F's, et là aussi le "stress" pour Paul qui voyait la Belgique ou l'Italie annexée par la France dans la nuit...

Nous avons QSO's de nombreuses stations sur les cinq bandes avec nos dipoles. Peu de QSO's sur les nouvelles bandes WARC. Interdiction de contacter les stations d'Israel et d'Afrique du Sud. Au premier CQ de Anwar en 707AA, dans le 'pileup" qui suit, Anwar nous sort ZS6! Il nous a remercie de l'avoir fait changer de

Que dire de plus? Que nous n'avons pas vu le temps passer. Les QSO's se sont alignés et les oreilles de Gérard et Paul ont quasiment tout entendu : des félicitations, des remerciements, des conseils pour nous apprendre à trafiquer, " a lot of questions", lorsque nous sommes en SSB : "À quelle heure en CW? Quand sur 21 MHz? 28 MHz?" Une voix anonyme a affirmé: "...a poor DXpedition, a CB operation", mais nous étions contents.

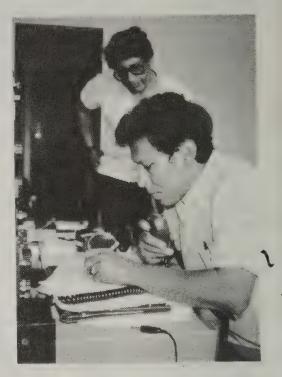
Imperturbablement, F6BLP, F5VU et le Bordeaux DX Groupe tenaient le sked bi-quotidien, et le 600 ohms avec nos familles. RFI nous informait de la situation dans le Golfe. La formation de 707AA progressait sans problème, et la grève se poursuivait à l'hôtel. Nous étions les deux seuls occupants d'un hôtel de 200 chambres. Le personnel machait du "OAT" à longeur de journée, en occupant le hall de l'hôtel.

Le samedi 11 août nous avons transféré la station dans les locaux de YTC, et installé la beam trois elements. Le dimanche 12, 707AA était actif dans sa position définative, et 708AA réalisait ses derniers OSO's. F6HWM fermait le log à 12h00. Nous prenions l'avion ce même jour à 20h30, et après escales à Djibouti et Ryad, puis Paris, nous étions accueillis par les membres du BDXG à 11h00 à Bordeaux. L'aventure était terminée.

Depuis, Paul a saisi les logs sur ordinateur. Toutes les QSL's pour J2ØX et 708AA, 707AA seront traitées par F6EXV et F2VX. Nous répondrons à toutes les QSL's reçues, y compris les SWL, en direct ou via bureau REF. Toute donnation ou contribution sera acceptée pour couvrir les frais de cette opération. Tout bénéfice éventuel sera donné à Médecine sans Frontières pour sa mission au Yemen.

F2VX et F6EXV n'ont été que les "acteurs" de cette aventure. Une nouvelle fois, nos remerciements les plus sincères vont aux "metteurs en scène" sans qui rien n'aurait pu être fait : J28AA, Mohamed Ahmed Hassan, Directeur géneral de l'Office des Postes et Télécommunications de la République de Djibouti, et Monsieur Moula, Directeur général de YTC qui avait pris sur lui de nous recevoir, ainsi que Monsieur le Consul général de la République du Yemen à Dijibouti. Les 19483 QSO's n'ont été possibles que grace à la fiabilité du matérial Kenwood, utilisé pendant 15 jours de suite, aux performances techniques du TS-950, en particulier à la sensibilité du

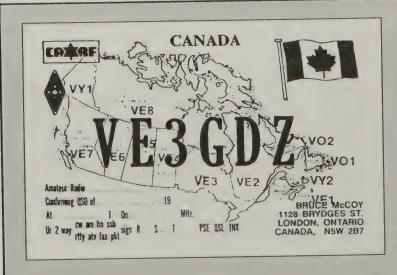
récepteur, et à la selectivité des filtres. Merci à Kenwood France. Enfin, les QSL's seront offertes par JA1BK. Merci à tous et à un prochain rêve! -Gérard Debelle, F2VX/708AA



Anwar et Hamed (devant) opérant la station. (F2VX/7O8AA photo)

#### WARC-92 PROGRAM AVAILABLE

Looking for a program idea for your next club meeting? CRRL International Affairs Vice President George Spencer, VE3AGS, and Bruce St. George, VE5ZN, have produced a slide show-complete with script on cassette tape-about WARC-92. This slide show explains the work of ITU and how frequency allocations are made. It also explains IARU and the role it will play at WARC-92. You can borrow this slide show without charge. Just contact your nearest CRRL director, VE3AGS or VE5ZN.



500 QSLs - Only \$48.95 or 1000 QSLs - Only \$77.25 PLUS SHIPPING AND ALL TAXES

Printed on one side only, in two colours. Map and flag printed in red, remainder printed in blue, on either white or buff Bristol Index. Tell me which you want. Report form only as shown, no changes. Please give me your CALL, NAME, ADDRESS AS IT IS TO BE PRINTED. CARF/CRRL membership logos supplied at no charge. For other membership logos (supplied by you) ADD \$2.00 each. SHIPPING EXTRA: 500s: VO1/VO2/VY1/VE7/VE8 ADD \$4.55; VE1/VY2/VE5/VE6 ADD \$3.95; VE2/VE3/VE4 ADD \$3.40. 1000s: VO1/VO2/VY1/VE7/VE8 ADD \$5.75; VE1/VY2/VE5/VE6 ADD \$5.00; VE2/VE3/VE4 ADD \$4.50. Also add ALL applicable taxes. Send cheque or money order payable to B. K. McCoy, 1128 Brydges Street, London, ON N5W 2B7.

#### VHF-UHF/THF-UHF

#### **Tips for Beginners**

#### **Polarization**

In VHF-UHF, unless you're working only FM, horizontal polarization is a must. We continue to hear horror stories of amateurs who have gone out and purchased multimode radios but who can't work DX on SSB or CW. In a majority of cases, it turns out that they didn't know that the VHF-UHF community uses horizontal polarization. Thus, you need a horizontally polarized yagi to be effective. Remember that by being the same polarization as everyone else, you pick up a whopping 20 dB of gain over trying operate using the opposite polarization.

#### Calling CQ

You have to call CQ to make SSB and CW contacts on VHF-UHF. Learn to call CQ properly. The standard procedure is a three-by-three call, just as recommended for HF: "CQ CQ CQ... this is VE3DSS calling, VE3DSS, Victor Echo Three Delta Sierra, standing by." Remember to call CQ a number of times over a period of a couple of minutes with your beam in a particular direction. This will give people a chance to adjust their own beams and tune you in. Don't forget to listen before you call. You don't want to interfere with QSOs on the frequency, especially weak-signal QSOs that may be just above your noise level. After listening, ask "Is this frequency in use?". Stand by for ten seconds. Then if you feel the frequency is clear, call CQ.

#### **Calling Frequencies**

Both the CRRL and ARRL band plans list calling frequencies. The correct procedure for using one of these is to call CQ, and then, once a QSO has started, to move off the frequency by at least 30 kHz. Why 30 kHz? Two reasons: It keeps the spectrum near the calling frequency clear of any sideband splatter and it ensures that others using the calling frequency won't interfere with you. This seems to be a tough practice to master, but it works well when everyone follows it.

#### PROPAGATION BEACON UPDATE

For those in Ontario, Quebec and the Atlantic Region, look for W9IP/2 auroral propagation beacon on 144.292 MHz. It's a good indicator of auroral levels on two metres, particularly early in the morning when activity levels are low. Doug, VE5UF, advises that the University of Saskatchewan Institute of Space and Atmospheric Studies operates many Arctic propagation research sites. One is a 49.995-

MHz 100-watt transmitter using a 4-element yagi, beaming at 100 degrees. The site is near High Level, Alberta, a few hundred kilometres northwest of Edmonton. Doug hears it all the time when the K-index is over four, and he urges all to listen for it.

#### JUNE VHF CONTEST

Congratulations to the gang who operated VE3ONT in the June ARRL QSO Party. VE3ONT hasn't been activated for a number of years and thanks to Dennis, VE3ASO (FN25), one of the founding members of the Toronto VHF Society in the early 1970s, a Canadian call placed in the top ten of the multioperator category. In fact, VE3ONT placed sixth in all of North America! Those who operated included VE3ASO, VE3KDH, VE3FN, W3EP, W9IP/2 and KA2RDO.

From *la belle province*, Daniel, VE2BAP, writes that he and Gilles, VE2DRW, Yvan, VE2MLX, and Martin, VE2MLX, operated from Mount Megantic, 3625 feet above sea level, from grid square FN45KJ, using the call VE2UMS. On two metres, the group used 160 watts and stacked 8-element yagis. On 70 cm, they ran 30 watts and 22 elements. They certainly enjoyed their third contest despite 60-mile per hour winds!

From the midwest, Larry, VE6KC, writes that he and the gang from the Novatel Club—Russ, VE6KZ, Les, VE6CA, and Paul, VE6PY—made the trek to Table Mountain for the contest. Larry says: "The weather was reasonably good. There was only a brief snow flurry and a bit of sleet, and the wind blew at almost 50 miles per hour on Saturday. Sunday was sunny and warm-almost. Band conditions ranged from normal to poor to spectacular. We experienced just about every kind of VHF propagation: tropospheric ducting, sporadic E and aurora on both six and two metres." Larry notes that UHF activity was way down from other contests and goes on to say, "Plateau Mountain is located 60 miles southwest of Calgary. There is a road right to the flat top which is maintained by an oil company which has several gas wells up there. At 8200 feet above sea level, there are no trees and there is very little life of any sort as the climate is rather severe. Even in June, snow in areas without sun can be six feet deep. However, the view is fantastic, with Calgary clearly visible. At night the lights of the towns and villages of southern Alberta can be seen. Needless to say, we can work anyone within 60 or 70 miles!" Look for VE6NOV in the September VHF QSO Party, and again next June.

Out on the west coast, the VHF contest bug infected Penticton ARC. VE7EHQ writes that the Penticton club station, VE7PRC, was active. Club members managed 42 QSOs for 32 grid squares on six, and 53 QSOs for 27 grid squares on two. Congratulations to VE7EHQ, VE7BEE, VE7RJ, VE7ASY, VE7KMD, VE7QP, VE7ASZ, VE7FUR, VE7EHF, VE7DAN and VE7KEV for this outstanding effort. Nice to see that VHF DXing is possible from British Columbia despite the

"pooh-poohing" of those who feel that province is suitable for FM only.

#### POST-VHF CONTEST "DO"

The June VE3ONT Post Contest "Do" was a massive success with a turnout of 26 VHFers. This is the biggest turnout since the late 1960s and augers well for the future of these get togethers. Thanks to Clarke, VE3WCB, for hosting the event, to Dick, VE3FAC, for his talk on soldering technology and techniques, to Bob, VE3BFM, and Sinclabs for covering the mailing, and to Kevin, VE3KDH, for handling the collection of the contest data.

#### **ACTIVITY REPORTS**

50 MHz: Mike, VE1XDX, sends the following report: " May was quiet until the 23rd when I QSOed LU9AEA at 1307 UTC with signals at 59! This contact was via a sporadic-E (Es) and TransEquatorial (TE) linkup. By 1330, the single-hop Es were producing W4, W8 and W9 signals until 1430." Mike notes that he gets good DX via Es/TE during periods of geomagnetic disturbance. On May 23 for example, the WWV numbers were 152/22/5. The afternoon of June 6 brought Mike some long-awaited double-hop sporadic-E DX to Europe. Between 2050 and 2140 he worked CU3/K6EDX (HM68) for country number 43. CU1EZ (HM76), GØJHC G4XNS, G1PMJ, GOOPH, G6ZJN, G4IFX, G2ADR, and G7DGH. Mike has his new 6-element Cushcraft yagi with a 24-foot boom. He hopes it performs for him all the way to DXCC!

While visiting Toronto, Doug, VE5UF, called in to report on propagation during the June 6 contest. Doug mentioned auroral E, sporadic-E, and some pretty wild times. He found the Ottawa gang in so strong on auroral E that he had to turn off his preamp! Doug worked as far east as New Brunswick (FN65), and on Sunday night had propagation to the east, southeast and southwest all at once. He worked stations in New York City, the Baltimore area, south Florida, and the Baja Peninsula (XE2), plus a long string of California stations before the end of the contest.

Some notes about the auroral events: The flares and "buzz" of June 1991 are bound to go down in VHF history as "the mother of all auroras". It started with a monster sunspot and solar flux numbers of 252/51/6 on the evenings of June 5 and 6. According to data from the University of Lethbridge supplied by Doug, VE5UF, the region that spawned the flares was so large, and so energetic the instruments aboard the GOES satellite saturated at the class X12 level for 20-25 minutes! Doug reported that he had nothing east of EN72 during the evening, but he did have lots of North West Territories TV repeaters into his QTH in Saskatoon. Here in the east not only was there enhanced southern aurora, but the flares sparked a late night (0404 UTC) transauroral-E opening to Jack, VE6JW near Edmonton, who was 57 into Toronto. Jack was overheard working K1TOL and a number of other US east coast stations, all of whom had solid signals. After a few minutes, with his signal building nicely into Toronto, Jack exclaimed, "Do I hear KL7s in there?" and turned his monster 6metre array northwest, fading into the noise while we in the east were still calling. During the same aurora, VE6BCC was heard working into California while those on the east coast were working into Texas. Down east, Mike, VE1XDX, reported that June 7 brought a midday opening to the Caribbean with FS/KA3B and VP9 worked for new DXCC countries. Later in the afternoon, Es brought CU3/K6EDX as well as many stations from W8- and W4-land

In The 50 MHz Bulletin, Harry, KA3B, writes that he operated from the Coralita Beach Hotel on the French side of the island of St Martin. He says, "Not only was the scenery beautiful, but the hotel had only one TV set which nobody watched." Harry noted that during the VHF contest, his North American contacts were made via a scatter path with his antenna pointed away from the continental US toward VP9 land. He also noted that there were no signals on ten metres during the time that six metres opened. He added that he had an incredibly good pipeline to VP9/WA4VCC every day that he was active, noting that Ted's signal was S9-plus for hours on end. Harry worked the following during his DXpedition: CU1EZ, K1RZ, LU2DEK, VE1XDX, VE1ZZ, YV4DDK, PZ1EE, P43AS and numerous W8 and W4 stations. Look for a repeat from this location in the future.

Len, VE3BGH, caught the auroral opening to the south and netted YV4AS (FK50), an HH and an HC4, and heard YV4AB. June 19 brought multihop Es to VE1XDX. Between 1945 and 2030 UTC, Mike worked VO1QF, CT1BXT and VE3BGH. He notes that all stations were audible at the same time. June 30 brought Mike more DX with lots of W2s, W3s, W4s and W8s into Nova Scotia, VP9IB at 1520, HH7PV at 1525, VP9HE at 1615, 807 HH7PV at 1807 and FM5WD at 2224! Incidentally, Mike notes that FM5WD's QSL manager is W3HNK. June 30 also found VE3VD hearing VP9IB "really strong" on six around 2356 UTC. Skip then started to shorten rapidly to the point where Peter was working the east coast gang including Lou, W1GXT, and Emil, W3EP, whose signals were "pinning the Smeter". When the skip is this short, the MUF is well above 50 MHz. Look for DX possibilities on 144 MHz. This episode resulted in a 2metre QSO between WI8V and VP9IB on July 1 at 0100 UTC.

John, VE1BVL, runs a fine station from Nova Scotia grid square FN95. At 0200 UTC, July 2, John, called CQ. After a quick QSO with VE3DSS, with signals well over S9, John was off working W6s. That was on the same day that Vic, VE3AIA, copied KKCK on the FM broadcast band while driving through Huntsville, Ontario.

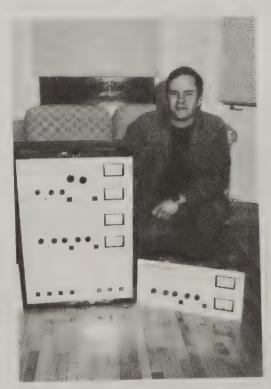
Aurora was evident throughout July with some pretty rare grid squares active from Quebec on July 13. Stations worked by VE3DSS and the southern Ontario gang included VE2BKL (FN48), 200 km from Quebec City. Because this auroral event occurred on a Saturday, there was activity all day and well into the night with contacts being made at 0930 UTC on Sunday, July 14. July 19 found the band open far and wide. Kevin, VE3KDH, worked a pile of stations including XEIGRR. July 20

also brought some good DX with Peter, VE3VD, working TI2NA.

144 MHz: Peter, VE3VD, reports good tropo on June 29, late in the evening. Contacts included KAØIJS (EN31) and N9IYU (EN52) at 0330 UTC, and W9VA (EN62) and NØNGN in Waterloo, Iowa (EN32), at 0412 UTC. Kevin, VE3KDH, worked KAØEWM and KAØIJS as well. Incidentally, Kevin has now worked 35 states and 125 grid squares on two metres. Not too shabby for a fellow who, only a couple of years ago, got bored with packet radio after two weeks with his new digital license, and stumbled onto the activity that refreshes: VHF SSB!

July 2, 0038 to 0051 UTC, found solid 2metre Es from VE3KDH and VE3VD to Florida (EL87 and EL88). Stations contacted included KK4GV, WA4CHA, N4KQR, NZ4M, N4KQR and KK4TZ (EL87). On July 2, Dick, VE3FAC, got a jolt during his regular 1100-UTC CQ session before going to work. With the beam south he was called by VE1BVL on aurora. Dick quickly turned his beam and within a few seconds had a pileup going. When the solar particles cleared he had logged QSOs with a large number of stations over a wide area including VE1BVL (FN95), K3ZO (FM18), N4HB (FM17), VE1BB (FN65), WA4PGM (EM79), WF9M WA9ZOH (EN53), W9JVC (EN51) WA4FBC (FM16), VE1AL (FN65). Bryan, WA8MZQ, reported that during a QSO on aurora in the wee hours of July 14 (0945 UTC), that his activity from EN96 netted him 93 QSOs, mostly on 144 MHz, as 50 MHz was fairly quiet on the day that he was there.

We thought that the sporadic E season had served up all that it had for 144 MHz until the evening of July 20 when the band opened to Florida for over two hours. Stations worked by the southern Ontario gang included N4UYO (EL88), WD8OSU (EL87), W4FF (EL96), WD4MGB (EL87), WB4OOJ (EL88), and WB2QLP (EL96) on SSB, and N4PLY



Bob Williams, VE3FVW, proudly displays his homebrew kilowatt amplifiers for 144 and 432 MHz. They're now on the air!

(EL95), KB4YJF (EL95), K3QKP (EL98), and WA4OWC (EL87) on 144.55-MHz FM.

220 MHz and up: Kevin, VE3KDH, has been very busy on 222 MHz. Among recent contacts: K9VGE (EN52) on tropo, and WB9OJR (EN50) on aurora on June 5. Many other Canadians amateurs are now looking for 220-MHz gear, including Mike, VE3SQD. The Toronto 432-MHz gang notes that Uncle Sam has again activated a radar somewhere in the Rochester area. Under good tropo conditions the signals can be quite strong. Fortunately, good noise blankers can suppress the worst of the signal when it blips through the passband.

Peter, VE3VD, has a notable set of 1296-MHz DX contacts under his belt from the ARRL June VHF Contest. He used 10 watts and a single 21-element looper at 40 feet from his home in Dunnville, Ontario (FN02). Dick, VE3FAC, made some interesting 1296-MHz contacts during the August UHF Contest. Running 1-watt output, through a 70 foot run of 7/8 inch heliax to his new four-bay array of 27element loop yagis, all on 7-foot booms rear mounted, he worked WD2FJK (FN21), W8EUU (EN82), WW8M (EN72), VE3ASO (FN25), K2SPO (FN13),WA3FFC (FN00), VE3WCB (FN03), VE3DIR (FN03) and WA8TJL (EN91). Dick promises more loop yagis and higher power in the future. He is in the process of building a driver amplifier using NEC transistors for his water cooled N6CAdesign 2C39-amplifier. Out in Winnipeg, Barry, VE4MA, is busy moving his operations to a new house. In the process he has run into some problems with a neighbour regarding his "moonbounce dish". We wish Barry luck in resolving this problem.

#### NOTES FROM ALL OVER

Len, VE3ASR, is a new 2-metre station in the Picton area. The Gaslight Net growing. Paul, VE3XXT, VE3XBR, and many others were among recent check-ins. Look for the Gaslight Net, every evening at 8 p.m. EST/EDT on 144.240 MHz

The Toronto FM Communications Society (TFMCS) has published a new link map. It shows that VE3RPT and associated machines are now linked from Uxbridge, northeast of Toronto, to North Bay, Sudbury, Foymount, Ottawa, Hamilton, and Buffalo, New York. Great work and congratulations to all those who are working hard to make Canada's oldest repeater system the biggest. Look for an ANIK link in the future.

On July 28, Chip Angle, N6CA, and Paul Lieb, KH6HME, set a new DX record on 3456 and 5760 MHz by spanning the 2471-mile path between Palos Verdes, California and Hawaii. N6CA operated from atop the Palos Verdes City Hall at 400 feet above sea level. KH6HME operated from the slopes of Mauna Loa at 8200 feet above sea level. Both stations were running five watts to 4-foot dishes. They used 144 MHz for liaison and monitored 432 and 1296 MHz as well. Propagation mode: tropospheric ducting.

Well, that's it for now. I hope that everyone enjoyed their summer. We look forward to hearing from all Canadian VHFers with their reports for the next column. I'd like to thank Clarke, VE3WCB, for the new callsign phonetics: Victor Echo Three Diapers Super Soluble! Check out the announcement for the CRRL Fall Sprints on page 9 of this QST

Canada. 73.

#### A Guest Column from the Quinte Area

John Lester, VE3MB, is EC for Hastings County in eastern Ontario. He is also the Emergency Services Chairman for the Red Cross Quinte Branch. Regular readers of this column will recall several contributions he has made to this column in the past. John is doing a fine job of getting his group and facilities organized. I asked him to give us an update on his group's activities. Here is his report:

—Bob Boyd, VE3SV

The Government of Ontario, through its Emergency Plans Act, encourages each community to prepare an emergency plan and by-laws to use in case of disaster. One essential element of a plan is a method of dealing with displaced persons who may need to be fed, clothed and housed for the duration of the disaster. This function is the responsibility of the municipality's social services department which, in turn, often delegates a portion of this responsibility to the Red Cross. A long-standing written agreement between Ontario Red Cross and CRRL assigns ARES the responsibility of providing the Red Cross with emergency communications. We therefore expect that an important part of our emergency efforts will be devoted to Red Cross communications, much of which will be of a health and welfare nature.

In most Ontario communities, civic officials have an awesome array of electronics at their command. Most communities are fully equipped with handheld and mobile equipment, UHF digital facilities and cellular telephones. They have many computer-proficient people on staff. In short, they are somewhat ahead of the average radio amateur in the use of high-tech equipment. It has been my experience that we amateurs are best to keep out of the way of local police, firefighters and other emergency-service professionals.

There is, however, one role in addition to assisting Red Cross that we are uniquely equipped to fill: providing a reliable and effective link between the local emergency operations centre and various provincial government departments. In our case, these are located at Queens Park, Toronto, over 100 miles to the west.

When a state of emergency is declared, the mayor or reeve of the municipality assumes full command of all local activity. When he or she needs help from the provincial authorities, it is needed fast and dependably. Experience in many past disasters has shown that the telephone system becomes unreliable—paralyzed by extensive public use—immediately after a

disaster. Sometimes, the telephone system is damaged in the disaster and becomes totally inoperative.

If ARES and civic officials have done their planning effectively, alternative communications can be provided. Here in the Quinte area of Hastings County, we have two large population centres, Belleville and Trenton. We can guarantee that the mayors of both cities can reach Toronto by voice on VHF, using the VE3ULR linked repeater system. This

#### Field Organization Reports June 1991

#### **CRRL Section Emergency Coordinator Reports**

Reports were received from the following SECs (DECs and ECs reporting to SECs are listed in brackets) denoting a total ARES membership of 1129.

Reporting	ARES Member
VE3GV (VE3s AFP, FFD, G	NW, LPM, SV,
TNL., WJK, ZIS)	62
VE4JR	5
VE6AFO (VE6s AMM, CI	BH) 30

#### **CRRL Section Traffic Manager Reports**

Orig Rovd Sent Dlvd

VE7FB

Call

VE1ALU VE1DLC VE1BTV VE1YS VE2GOP VE2BP VE2WH VE2JN VE2ALE VE3ORN VE3CYR VE3BDM VE3GSQ VE3GT VE3BMV VE3BAJN VE3GSQ VE3GT VE3KXB VE3NVJ VE3KCZ VE3LPM VE3FGU VE3BAJ VE3BBG VE4JA VE4FP VE5KZ VE5JML VE6CE VE6GIL VE6CP VE6AKY VE6ABC VE7BNI VE7FAZ VE7ANG VE7FB VE7CCJ VE7EGM VE7FB VE7CDJ VE7FRZ VE7DJ VE7ALV VE7BCF	1000062103000200001100012040130401700001120020000	17 15 15 15 16 16 16 16 16 16 16 16 17 17 18 19 16 16 16 17 18 19 19 19 19 19 19 19 19 19 19 19 19 19	1576608144054331366685852100601123638994832131668585210061123638994832131	3900 919163181001200000321101060840100606422546201002101	36 31 14 11 136 248 14 15 126 27 59 53 51 51 51 51 51 51 51 51 51 51 51 51 51
VE/DOF	U	~	1	- 1	4

Call VE7GKA VE7BZI	Orig 0 1	Rcvd 1 0	Sent 2		3
National Traff	fic Sy	stem			
Net (Mgr) APN (VE1YS) KTN (VE3AJN) OLN (VE3POJ) OPN (VE3AJN) OQN-D (VE3OF) OQN-E (VE3CY) OQN-L (VE3GS) MEPN (VE4LB) MMWX (VE4TE) MTN (VE4IX)	RN) (R) Q)	Se	30 12 30 30 28 27 18 15 30 9	QNI 122 88 572 508 70 74 16 279 233 22	QTC 75 28 35 138 15 78 20 5 21
APSN (VE6AKY ATN (VE6CPP) BCEN (VE7EJU	,		30 30 30	391 151 676	82 271
DOLIN (VE/EUU	1		00	010	21

#### **Brass Pounders' League**

This listing is available to amateurs who report to their SM a traffic total of 500 or a sum of originations and delivery points of 100 or more for any calendar month. All messages must be handled on amateur frequencies, using standard ARRL-CRRL form, within 48 hours of receipt.

BPL: None this month.

143

Total

#### **Public Service Honour Roll**

(1991 Revision) This listing is available to amateurs whose public service performance during the month indicated qualifies for 70 or more points in the following eight categories (as reported to their SM). Please note maximum points for each category: (1) Checking into a public service net using any mode, 1 point each, maximum 60; (2) Acting as a Net Control Station (NCS) for a public service net using any mode, 3 points each time, maximum 24; (3) Performing assigned liaison between public service nets, 3 points each time, maximum 24; (4) delivering a formal message to a third party, 1 point each, no maximum; (5) Originating a formal message from a third party, 1 point each, no maximum; (6) Serving as a CRRL SM or field appointee, 10 points are appointed to the first and the serving as a constitution of the serving as a c for each office or appointment, maximum 30; (7) Participating in a communications network for a public service event, 10 points each event, no maximum; and (8) Providing and maintaining an automated digital system that handles messages in standard ARRL-CRRL format, 30 points. Amateurs who qualify for Public Service Honour Roll 12 consecutive months, or 18 months out of a 24-month period, will be awarded a special certificate from CRRL Headquarters.

PSHR: VE4JA (130), VE3ORN (107), VE4LB (101), VE3BDM (90), VE4STU (82), VE3GNW (72), VE3CYR (66)

#### Service and Specialized Nets

Independent Net Managers: Your monthly reports are welcomed. Send to CRRL, Box 7009, Station E, London, ON N5Y 4J9.

Net (Mgr)	Sess	QNI	QTC
ARES Canada (VE3GV)	5	32	1
ARES Ontario (VE3GV)	1	5	0
CRRL ONTARS (VE3FQV)	30	6620	0
Grey-Bruce (VE3WV)	29	74	25
Grey-Bruce SS (VE3WV)	29	88	28
Aurora-1 (VE4AHG)	26	669	3
Aurora-2 (VE4FP)	22	465	2
ARES Alberta (VÉ6AKY)	8	146	5

system provides effective communications throughout southern Ontario, from Kingston in the east to London in the west, and north well into the Georgian Bay area.

We have put considerable effort into obtaining the support of the chiefs of police of both cities. Two things have worked in our favour. First, we have an active, progressive radio club with many members interested in and supportive of ARES. Second, we have access to the linked repeater system mentioned above. As a result, we were able to go to the police chiefs with a firm offer of Amateur Radio support in time of disaster. We could guarantee that the two mayors could talk to Toronto in the absence of telephones or electric power. This capability convinced the police chiefs who in turn convinced their commissioners.

An important aspect of our work during the past year or so has been the construction of 2-metre antennas, and their installation at key points in the community. We have standardized on the extended double Zepp described in my article in 1990 May *QST Canada*. This antenna is physically very strong, and if constructed carefully, should give ten years or more of trouble-free service. The gain of this antenna is good, and it provides excellent coverage, even using low-power handheld transceivers.

Working with the Emergency Services group of the Quinte Branch of Red Cross Ontario, a network has been set up to get health and welfare traffic flowing into and out of our two cities during a disaster. This network covers an area with a radius of roughly thirty kilometres, centred on Belleville. Within this area, we have identified about twenty sites for emergency stations. These include the headquarters of provincial and city police; Red Cross headquarters; four conservation areas; CFB Trenton; the Belleville, Prince Edward County and Napanee hospitals; and the homes of key ARES members. To date, extended double Zepp antennas have been installed at 17 of these locations. The remaining locations will be equipped with these antennas over the next few months. These antennas will ensure reliable communications throughout the area, even using 2-metre handheld transceivers running only two watts.

I want to pay tribute here to the huge contribution that Terry Darling, VE3CAB, has made to emergency communications in southern Ontario. He and the many people working with him have done a superb job in developing the VE3ULR linked repeater system mentioned earlier. Also, Jim Eadie, VE3DCX, has given strong and enthusiastic support in organizing our operations. Jim, a provincial police officer, is well known as a traffic

handler and long-time supporter of ARES.

I enjoy a close working relationship with Ted Goodler, VE3KKX, EC of Prince Edward County, and Bob Boyd, VE3SV, EC for the Kingston area. The three of us frequently exchange ideas, and we collaborate in joint exercises. What we have accomplished would be impossible without the active encouragement of the Quinte and Prince Edward Amateur Radio clubs. Members of these clubs are the people who will do the operating during a disaster, and who have given the moral and financial support needed.

I hope this review of what we have accomplished in the Quinte area will provide encouragement and perhaps some useful ideas for other ARES groups across the country. —John Lester, VE3MB

This column appears in both The Canadian Amateur and in QST Canada. We hope that it serves as an ongoing source of news and information about ARES for members of both CRRL and CARF.

A reminder that ARES is part of the CRRL Field Organization, although you do not have to be a CRRL member to take part. For more information about how to set up an ARES group, contact your CRRL Section Manager (address appears on page 3 of this QST Canada) or your CRRL Section Emergency Coordinator.—Editor

## ALFA

& CENTRAL WESTERN COMMUNICATIONS LTD.

7747–85 STREET EDMONTON, ALBERTA T6C 3B4

YAESU, ICOM, KENWOOD, ALINCO, CUSHCRAFT, KLM, TELEX HY-GAIN, LARSEN, MFJ, HUSTLER, WINTENNA, DELHI, AMERITRON, B & W, NYE VIKING, VIBROPLEX, UNADILLA, AND HAM BOOKS.

STAN FOX, VE6AWX 466-5779 469-0654 8:00 AM TO 5:30 PM MONDAY THRU FRIDAY

#### Ham-Ads



Advertisements must pertain to Amateur Radio. For individuals or firms offering products or services for sale, the rate is \$0.50 a word. This is reduced to \$0.25 per word for those seeking to dispose of or acquire personal station equipment. Telephone numbers count as one word. No charge for postal codes. Unless specified, a Ham-Ad will appear in the next available issue of *QST Canada*. Send Ham-Ads to CRRL, Box 56, Arva, ON NOM 1CO.

FOR SALE: Kenwood TS-140S, new: \$875 firm. Kenwood TS-830S: \$700. Roly Burley, Box 194, Bridgenorth, ON K0L 1H0, Tel (705) 292-7352.

FOR SALE: Eimac 8877 (3CX1500A7) linear amplifier tube. New—NEVER USED: \$500. Larry Horlick, VE8HL, Box 1082, Iqaluit, NT X0A 0H0, Tel (819) 979-6981.

FOR SALE: Ten-Tec Paragon, Ten-Tec Hercules Amplifier, Ten-Tec tuner, all rack mounted: \$3700. Gordon Watt, VE4IF, 23 Mackie Bay, Winnipeg, MB R2Y 1V8, Tel (204) 885-6361 or 889-2990.

#### WE NEED YOUR HELP

Please check the mailing label on the cover of this magazine. If you are licensed, your callsign should appear after your name. If it does not, we would like to know. Please tell us the seven-digit number on your mailing label, and the callsign we are missing. Send this information to CRRL, Box 56, Arva, ON NOM 1CO.—Ray Staines, VE3ZJ

#### A Badge of Honour



### The Quarter Century Wireless Assn.

(Founded 1947)

If you were first licensed in 1966 or earlier, you can belong to the exclusive fraternity of QCWA. Join Southern Ontario Chapter 73—and exchange memories, experiences, banter and technical information with others of your own generation-at our twice-annual luncheon meetings and on weekly nets (Sundays at 0900 local time on 3773 kHz, and at 1300 local time on 7088 kHz). Our next get-together is scheduled for October 5 at the Mohawk Inn, Campbellville, Ontario, near Exit 312 just north of Highway 401. Join us! Bring a friend, prospective member or not. For application form and fee information, contact Secretary Fred Wilkinson, VE3AJW, R. R. 6, Simcoe, Ontario N3Y 4K5, Telephone (519) 582-4814.

# Fall Savings!

If you have been waiting for the right time to pick up a compact VHF portable, this is it! ICOM's IC-2SAT is the pinnacle of the handheld VHF world, offering incomparable features, performance, and flexibility. For instance, you can store your favourite operating frequencies in any of the 48 Memory Channels, dial often-used numbers from the 10 DTMF Code Memory Channels, access the many radio functions from the Direct-Entry Keyboard, utilize any of the 4 Scanning Modes to monitor special frequencies, and select from a wide range of battery packs and other accessories to make your new IC-2SAT fit your specific needs.

ICOM IC-2SAT only \$409!

ICOM IC-24AT only \$535!





Or if dual band operation is your goal, the IC-24AT fills the bill perfectly, especially at our fall special price of only \$535!

The IC-24AT provides Crossband Full Duplex capability to give you telephone-style QSOs, up to 80 Memory Channels, 4 DTMF Code Memory Channels, 6 scan functions, a 24-hour System Clock with Timer Function, Priority Watch, a full 5 Watts Output Power (when used with 13.8VDC source), a comprehensive Dual Band Function Display, and much more!

#### AEA ISO-144 only \$69!

If 2-meter base operation is in your plans this fall, you can't go wrong with the ever-popular **AEA IsoPole**, and we are now offering the VHF version at the super price of \$69!

The cones deliver greater efficiency over obsolete radials, maximum obtainable gain for the antenna size, exceptional decopuling, and less feedline pickup of computer hash noise than any equivalent antenna!

Built to withstand the environment, the IsoPole will give you many years of top performance!

(10' x 1.25" mast not included)



Com-West Radio Systems Ltd.

8179 Main Street Vancouver, B.C V5X 3L2 Fax (604) 321-6560 (604) 321-1833

COM V/M MW IC-24AT **Dual Band** Transceiver BATTERY PACK IC-W2A

IC-W2A Dual Band Transceiver

ACTUAL SIZE

Icom continues to dominate the industry with exceptional product design and innovation. The IC-24AT firmly established Icom as the leader in dual band technology. Now the IC-W2A gives you the advantage of choosing the dual bander best suited for your needs.

The new IC-W2A dual band handheld sets the pace with its sleek design and superior characteristics. Designed for the user who demands the finest features available, the IC-W2A boasts simultaneous dual band receive. Listen to one band while talking on the other! Three tuning systems, high speed scanning with priority watch and 60 memory channels add to the luxurious IC-W2A.

Both the IC-W2A and IC-24AT give you full operation on the two-meter and 440MHz amateur bands with outstanding wideband receive capability.

Each unit features up to five watts of power, programmable scanning, priority watch, a battery saver, DTMF pad for memory channel autopatching, 24 hour clock with timing system, multi-function LCD readouts...the list is infinite. See the IC-W2A and the IC-24AT today at your authorized Icom dealer.

## SETTING THE PACE IN DUAL BAND DESIGN

For full details and specifications on the IC-W2A and IC-24AT, call the Icom Brochure hotline at 1-800-999-9877.

CORPORATE HEADQUARTERS ICOM America, Inc., 2380-116th Ave. N.E., Bellevue, WA 98004 Customer Service Hotline (206) 454-7619 CUSTOMER SERVICE CENTERS 18102 Sky Park South, Suite 52-B, Irvine, CA 92714 1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349 3071 - #5 Road, Unit 9, Richmond, B.C. V6X 274 Canada All stated specifications are subject to change without notice or obligation. All KCOV ardiox significantly exceed FCC regulations limiting spurious emissions.

O ICOM